FIGURE 1

```
R35464 GGCCGGGTCG TTTCTCGCCT GGCTGGGATC GCTGCTCCTC TCTGGGGTCC   50
ORF      P  G  R  F  S  P  G  W  D  R  C  S  S  L  G  S      16

R35464 TGGCCGGCCG ACCGAGAACG CAGCATCCAC GACTTCTGCC TGGTGTCGAA  100
ORF    W  P  A  D  R  E  R  S  I  H  D  F  C  L  V  S  K     33

R35464 GGTGGTGGGC AGATTCCGGG CCTCCATGCC TAGGTGGTGG TACAATGTCA  150
ORF      V  V  G  R  E  R  A  S  M  P  R  W  W  Y  N  V  T    50

R35464 CTGACGGATC CTGCCAGCTG TTTGTGTATG GGGGCTGTGA CGGAAACAGC  200
ORF      D  G  S  C  Q  L  F  V  Y  G  G  C  D  G  N  S      66

R35464 AATAATTACC TGACCAAGGA GGAGTGCCTC AAGAAATGTG CCACTGTCAC  250
ORF    N  N  Y  L  T  K  E  E  C  L  K  K  C  A  T  V  T     83

R35464 AGAGAATGCC ACGGGTGACC TGGCCACCAG CAGGAATGCA GCGGATTCCT  300
ORF      E  N  A  T  G  D  L  A  T  S  R  N  A  A  D  S  S  100

R35464 CTGTCCCAAG TGCTCCCAGA AGGCAGGATT CTTGAAGACC ACTTCAGCGA  350
ORF      V  P  S  A  P  R  R  Q  D  S  *  R  P  L  Q  R     116

R35464 TATGTTTCAA NTATTGNAAG AATAATTGCA CCGNCAACGN ATT-------  393
ORF    Y  V  S  *  I  *  R  I  I  A  P  *  T  *              130
```

KEY
R35464 = Nucleic acid sequence of EST R35464 (SEQ ID NO: 12)
ORF = EST R35464 Open Reading Frame Translation (SEQ ID NO: 13)

FIGURE 2

```
R74593 GCAATAATTA CCTGACCAAG GAGGAGTGCC TCAAGAAATG TGCCACTGTC   50
ORF     Q  *  L  P  D  Q  G   G  V  P   Q  E  M   C  H  C  H   17

R74593 ACAGAGAATG CCACGGGTGA CCTGGCCACC AGCAGGAATG CAGCGGATTC  100
ORF     R  E  C   H  G  *   P  G  H  Q   Q  E  C   S  G  F    33

R74593 CTCTGTCCCA AGTCTCCCAG AAGGCAGGAT TCTGAAGACC ACTCCAGCGA  150
C F     L  C  P  K   S  P  R   R  Q  D   S  E  D  H   S  S  D

R74593 TATGTTCAAC TATGAAGAAT ACTGCACCGC CAACGCAGTC ACTGGGCCTT  200
ORF     M  F  N   Y  E  E  Y   C  T  A   N  A  V   T  G  P  C   67

R74593 GCCGTGCATC CTTCCCACGC TGGTACTTTG ACGTGGAGAG GAACTCCTGC  250
ORF     R  A  S   F  P  R   W  Y  F  D   V  E  R   N  S  C    83

R74593 AATAACTTCA TCTATGGAGG CTGCCGGGGC AATAAGAACA GCTACCGCTC  300
ORF     N  N  F  I   Y  G  G   C  R  G   N  K  N  S   Y  R  S  100

R74593 TGAGGAGGCC TGCATGCTCC GCTGCTTCCG CCAGCAGGAG AATCCTCCCC  350
ORF     E  E  A   C  M  L  R   C  F  R   Q  Q  E   N  P  P  L  117

R74593 TGCCCCTTGG CTCAAAGGTG GTGGTTCTGG CCGGGGCTGT TTCGTGATGG  400
ORF     P  L  G   S  K  V   V  V  L  A   G  A  V   S  *  W   133

R74593 TGTTGATCCT TTTCCTGGGG AGCNTCCATG GTCTTACTGA TTCCGGGTGG  450
ORF     C  *  S   F  S  W   G  A  S  M   V  L  L   I  P  G  G  150

R74593 CAAGGAGGAA CCAGGAGCGT GCCCTGCGGA NCGTCTGGAG CTTCGGAGAT  500
ORF     K  E  E   P  G  A   C  P  A  X   R  L  E   L  R  R  *  167

R74593 GACAAGGGNT                                              510
ORF     Q  G                                                   169
```

KEY
R74593 = Nucleic acid sequence of EST R74593 (SEQ ID NO: 14)
ORF = EST R74593 Open Reading Frame Translation (SEQ ID NO: 15)

FIGURE 3

3

```
R35464          GGCCGGGTCGT TTCTCGCCTG GCTGGGA-TC GCTGCTCCTC TCTGGGGTCC  50
N39798                                 TGGGANTC GCTGCTCCTC TCTGGGGTCC  28
H94519           GCNGCG-CGT TNNTCGCNT- GCTGGGA-TC GCTGCACCTC TCTGGGGTCG  47
R74593 corr.    ---------- ---------- ---------- ---------- ----------
Consensus       GGCCGGGTCGT TTCTCGCCTG GCTGGGA-TC GCTGCTCCTC TCTGGGGTCC  50
Translation      A  G  S  F   L  A  W   L  G   S   L  L  L   S  G  V     -3

R35464          TGGCCGGCCG ACCGAGAACG CAGCATCCAC GACTTCTGCC TGGTGTCGAA 100
N39798          TGG-CGGCCG ACCGAGAACG CAGCATCCAC GACTTCTGCC TGGTGTCGAA  77
H94519          NGG-CGGCCG ACCGAGAACG CAGCATCCAC GACTTCTGCC TGGTGTCGAA  96
R74593 corr.    ---------- ---------- ---------- ---------- ----------
Consensus       TGG-CGGCCG ACCGAGAACG CAGCATCCAC GACTTCTGCC TGGTGTCGAA  99
Translation      L  A  A  D   R  E  R   S  I  H   D  E  C  L   V  S  K  15

R35464          GGTGGTGGGC AGATTCCGGG CCTCCATGCC TAGGTGGTGG TACAATGTCA 150
N39798          GGTGGTGGGC AGATGCCGGG CCTCCATGCC TAGGTGGTGG TACAATGTCA 127
H94519          GGTGGTGGGC AGATGCCGGG CCTCCATGCC TAGGTGGTGG TACAATGTCA 146
R74593 corr.    ---------- ---------- ---------- ---------- ----------
Consensus       GGTGGTGGGC AGATGCCGGG CCTCCATGCC TAGGTGGTGG TACAATGTCA 149
Translation      V  V  G   R  C  R  A   S  M  R   R  H  H   X  N  V  T  32

R35464          CTGACGGATC CTGCCAGCTG TTTGTGTATG GGGGCTGTGA CGGAAACAGC 200
N39798          CTGACGGATC CTGCCAGCTG TTTGTGTATG GGGGCTGTGA CGGAAACAGC 177
H94519          CTGACGGATC CTGCCAGCTG TTTGTGTATG GGGGCTGTGA CGGAAACAGC 196
R74593 corr.    ---------- ---------- ---------- ---------- --------GC   2
Consensus       CTGACGGATC CTGCCAGCTG TTTGTGTATG GGGGCTGTGA CGGAAACAGC 199
Translation       D  G  S   C  Q  L   E  V  X   G  G  C   R  G  N  S   48

R35464          AATAATTACC TGACCAAGGA GGAGTGCCTC AAGAAATGTG CCACTGTCAC 250
N39798          AATAATTACC TGACCAAGGA GGAGTGCCTC AAGAAATGTG CCACTGTCAC 227
H94519          AATAATTACC TGACCAAGGA GGAGTGCCTC AAGAAATGTG CCACTGTCAC 246
R74593 corr.    AATAATTACC TGACCAAGGA GGAGTGCCTC AAGAAATGTG CCACTGTCAC  52
Consensus       AATAATTACC TGACCAAGGA GGAGTGCCTC AAGAAATGTG CCACTGTCAC 249
Translation     N  N  Y  L   T  K  E   E  C  L   K  K  C  A   T  V  T  65

R35464          AGAGAATGCC ACGGGTGACC TGGCCACCAG CAGGAATGCA GCGGATTCCT 300
N39798          AGAGAATGCC ACGGGTGACC TGGCCACCAG CAGGAATGCA GCGGATTCCT 277
H94519          AGAGAATGCC ACGGGTGACC TGGCCACCAG CAGGAATGCA GCGGATTCCT 296
R74593 corr.    AGAGAATGCC ACGGGTGACC TGGCCACCAG CAGGAATGCA GCGGATTCCT 102
Consensus       AGAGAATGCC ACGGGTGACC TGGCCACCAG CAGGAATGCA GCGGATTCCT 299
Translation      E  N  A   T  G  D  L   A  T  S   R  N  A   A  D  S  S  82

R35464          CTGTCCCAAG TGCTCCCAGA AGGCAGGATT CTTGAAGACC ACTTCAGCGA 350
N39798          CTGTCCCAAG TGCTCCCAGA AGGCAGGATT CT-GAAGACC ACTCCAGCGA 326
H94519          CTGTCCCAAG TGCTCCCAGA AGGCAGGATT CT-GAAGACC ACTCCAGCGA 345
R74593 corr.    CTGTCCCAAG TGCTCCCAGA AGGCAGGATT CT-GAAGACC ACTCCAGCGA 151
Consensus       CTGTCCCAAG TGCTCCCAGA AGGCAGGATT CT-GAAGACC ACTCCAGCGA 348
Translation       V  P  S   A  P  R   R  Q  D   S   E  D  H   S  S  D  99

R35464          TATGTTTCAA NTATTGNAAG AATAATTGCA CCGNCAACGN ATT------- 393
N39798          TATGTT-CAA CTA-TG-AAG AATACT-GCA CCGCCAACGC AGTCACTGGG 372
H94519          TATGTT-CAA CTA-TG-AAG AATACTGGCA CCGCCAACGC ATTCACTGGG 392
R74593 corr.    TATGTT-CAA CTA-TG-AAG AATACT-GCA CCGCCAACGC AGTCACTGGG 197
Consensus       TATGTT-CAA CTA-TG-AAG AATACT-GCA CCGCCAACGC AGTCACTGGG 394
Translation      M  F   N   Y   E   E   Y  C   T   A  N  A   V  T  G   113
```

FIGURE 3 (CON'T)

4

```
R35464          ---------- ---------- ---------- ---------- ----------
N39798          CCTTGC-GTG GAATCCTTTC CCACGCTGGN AATTTNGACG TTGAGAAGGA 421
H94519          CCT-GC-GTG -CATCCTT-C CCACGCTGGT ACTTT-GNCG ---------- 427
R74593 corr.    CCTTGCCGTG -CATCCTT-C CCACGCTGGT ACTTT-GACG TGGAGA-GGA 243
Consensus       CCTTGCCGTG -CATCCTT-C CCACGCTGGT ACTTT-GACG TGGAGA-GGA 440
Translation     P  C  R  A     S  F     P  R  W  Y     F  D  V     E  R     N 129

R35464          ---------- ---------- ---------- ---------- ----------
N39798          AC-------- ---------- ---------- ---------- ---------- 423
H94519          ---------- ---------- ---------- ---------- ----------
R74593 corr.    ACTCCTGCAA TAACTTCATC TATGGAGGCT GCCGGGGCAA TAAGAACAGC 293
Consensus       ACTCCTGCAA TAACTTCATC TATGGAGGCT GCCGGGGCAA TAAGAACAGC 490
Translation       S  C  N     N  F  I     Y  G  G  C     R  G  N     K  N  S   145

R35464          ---------- ---------- ---------- ---------- ----------
N39798          ---------- ---------- ---------- ---------- ----------
H94519          ---------- ---------- ---------- ---------- ----------
R74593 corr.    TACCGCTCTG AGGAGGCCTG CATGCTCCGC TGCTTCCGCC AGCAGGAGAA 343
Consensus       TACCGCTCTG AGGAGGCCTG CATGCTCCGC TGCTTCCGCC AGCAGGAGAA 540
Translation     Y  R  S  E     E  A  C     M  L  R     C  F  R  Q     Q  E  N  162

R35464          ---------- ---------- ---------- ---------- ----------
N39798          ---------- ---------- ---------- ---------- ----------
H94519          ---------- ---------- ---------- ---------- ----------
R74593 corr.    TCCTCCCCTG CCCCTTGGCT CAAAGGTGGT GGTTCTGGCC GGGGCTGTTT 393
Consensus       TCCTCCCCTG CCCCTTGGCT CAAAGGTGGT GGTTCTGGCC GGGGCTGTTT 590
Translation       P  P  L     P  L  G  S     K  V  V     V  L  A     G  A  V  S 179

R35464          ---------- ---------- ---------- ---------- ----------
N39798          ---------- ---------- ---------- ---------- ----------
H94519          ---------- ---------- ---------- ---------- ----------
R74593 corr.    CGTGATGGTG TTGATCCTTT TCCTGGGGAG CNTCCATGGT CTTACTGATT 443
Consensus       CGTGATGGTG TTGATCCTTT TCCTGGGGAG CNTCCATGGT CTTACTGATT 640
Translation       *  W  C     *  S  F     S  W  G  A     S  M  V     L  L  I   195

R35464          ---------- ---------- ---------- ---------- ----------
N39798          ---------- ---------- ---------- ---------- ----------
H94519          ---------- ---------- ---------- ---------- ----------
R74593 corr.    CCGGGTGGCA AGGAGGAACC AGGAGCGTGC CCTGCGGANC GTCTGGAGCT 493
Consensus       CCGGGTGGCA AGGAGGAACC AGGAGCGTGC CCTGCGGANC GTCTGGAGCT 690
Translation     P  G  G  K     E  E  P     G  A  C     P  A  *  R     L  E  L  ...

R35464          ---------- --------
N39798          ---------- --------
H94519          ---------- --------
R74593 corr.    TCGGAGATGA CAAGGGNT                                        ...
Consensus       TCGGAGATGA CAAGGGNT                                        ...
Translation       R  R  *     Q  G                                         ...
```

KEY

R35464 = Nucleic acid sequence of EST R35464 (SEQ ID NO.: 12)
N39798 = Nucleic acid sequence of EST N39798 (SEQ ID NO.: 17)
H94519 = Nucleic acid sequence of EST H94519 (SEQ ID NO.: 16)
R74593 corr. = Corrected version of (SEQ ID NO.: 14) G at b.p. ...
Consensus = Nucleic acid sequence for human bikunin (SEQ ID NO.: ...
Translation = Amino acid Translation of Consensus (SEQ ID NO.: ...

Figure 4 A.

5

Schematic depicting the overlap of ESTs bearing homology to the cDNA sequence encoding placental bikunin

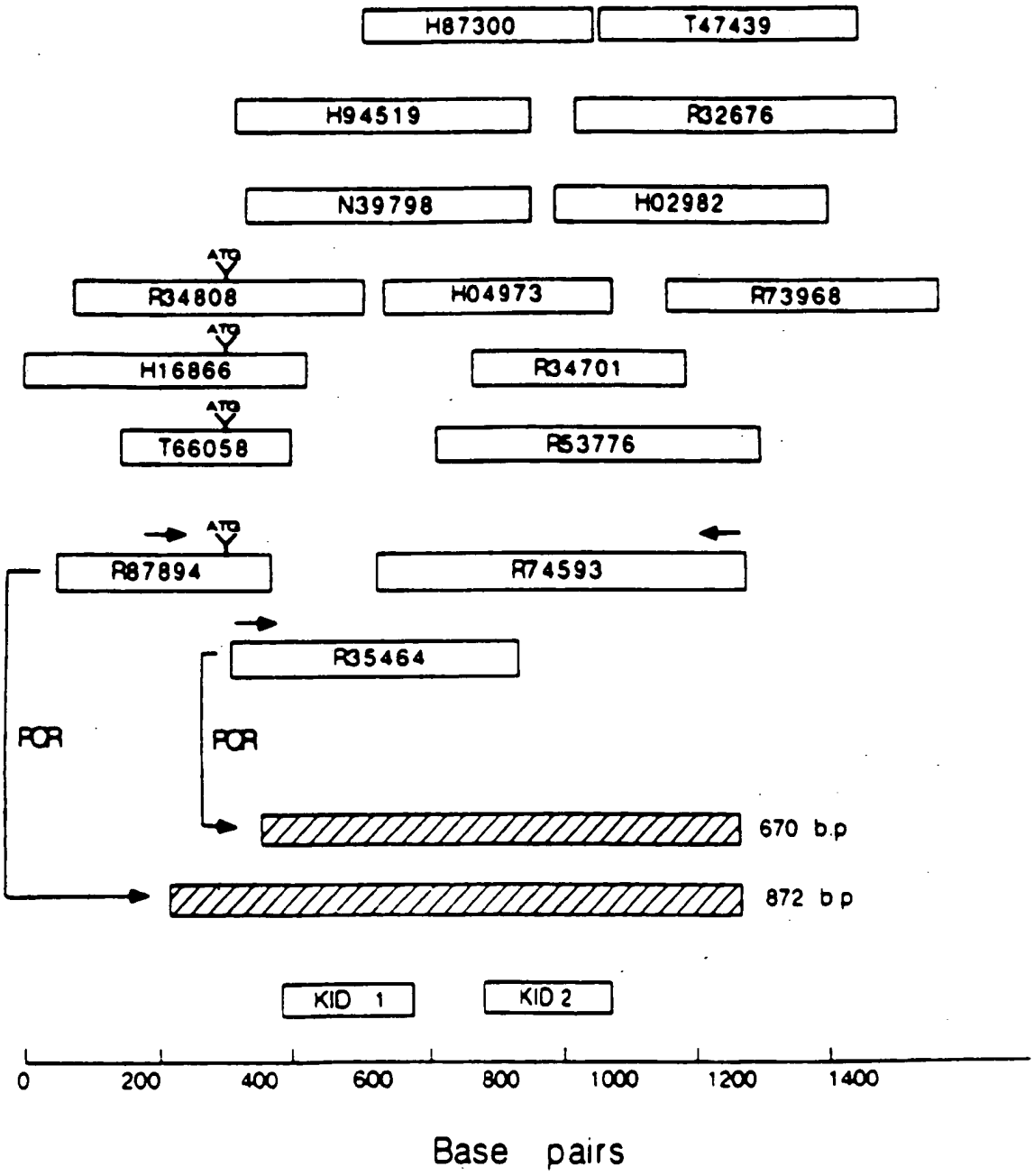

Figure 4B

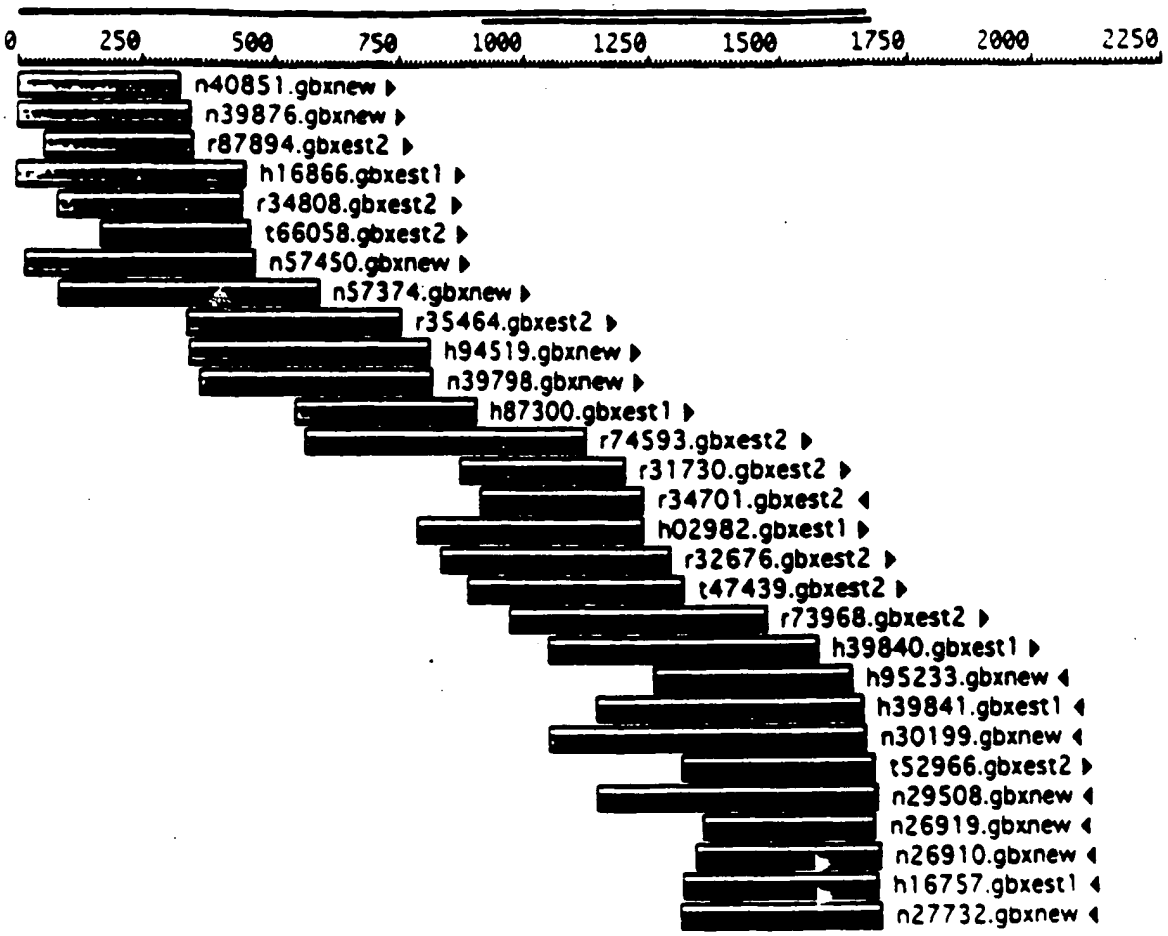
0
250
500
750
1000
1250
1500
1750
2000
2250
n40851.gbxnew
n39876.gbxnew
r87894.gbxest2
h16866.gbxest1
r34808.gbxest2
t66058.gbxest2
n57450.gbxnew
n57374.gbxnew
r35464.gbxest2
h94519.gbxnew
n39798.gbxnew
h87300.gbxest1
r74593.gbxest2
r31730.gbxest2
r34701.gbxest2
h02982.gbxest1
r32676.gbxest2
t47439.gbxest2
r73968.gbxest2
h39840.gbxest1
h95233.gbxnew
h39841.gbxest1
n30199.gbxnew
t52966.gbxest2
n29508.gbxnew
n26919.gbxnew
n26910.gbxnew
h16757.gbxest1
n27732.gbxnew

Figure 4C

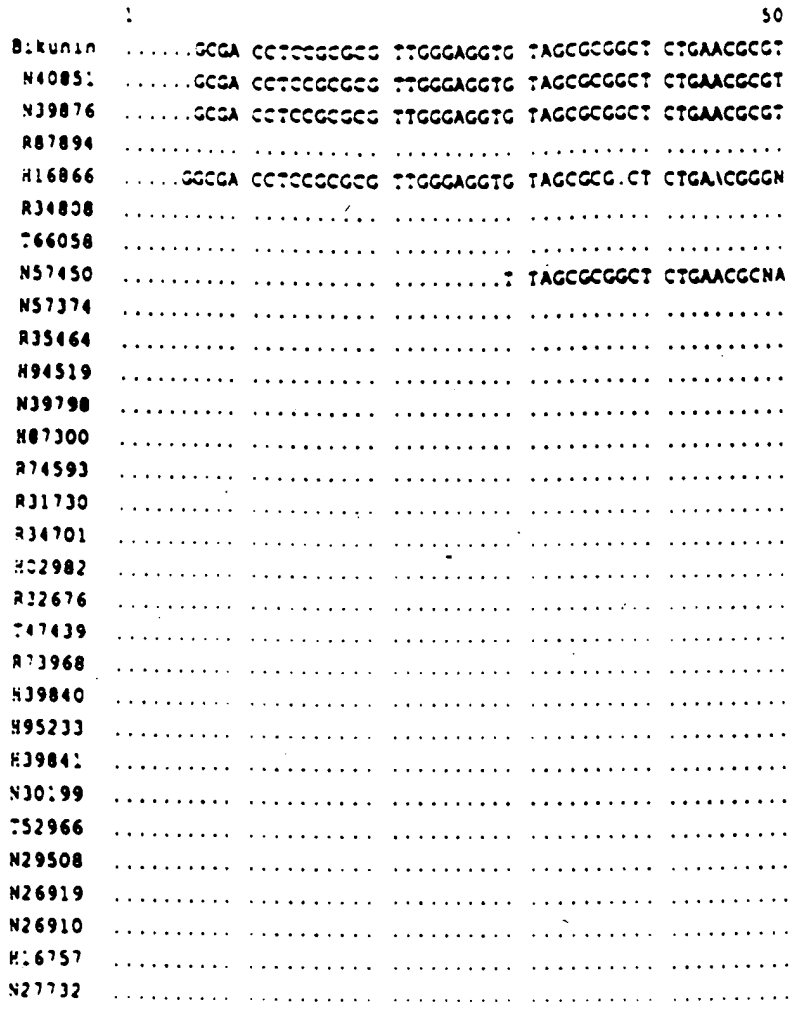
1
50
Bikunin .....GCGA CCTCCGCGCC TTGGGAGGTG TAGCGCGGCT CTGAACGCGT
N40851 .....GCGA CCTCCGCGCC TTGGGAGGTG TAGCGCGGCT CTGAACGCGT
N39876 .....GCGA CCTCCGCGCC TTGGGAGGTG TAGCGCGGCT CTGAACGCGT
R87894 .....
H16866 .....GGCGA CCTCCGCGCC TTGGGAGGTG TAGCGCG.CT CTGA\CGGGN
R34838 .....
T66058 .....
N57450 .....T TAGCGCGGCT CTGAACGCNA
N57374 .....
R35464 .....
H94519 .....
N39798 .....
N87300 .....
R74593 .....
R31730 .....
R34701 .....
HC2982 .....
R32676 .....
T47439 .....
R73968 .....
N39840 .....
N95233 .....
H39841 .....
N30199 .....
T52966 .....
N29508 .....
N26919 .....
N26910 .....
H16757 .....
N27732 .....

Figure 4C (Con't)

```
          51                                                        100
Bikunin   GNA GGGCCG TTGAGTGTCG CAGGCGGCGA GGGCGCGAGT GAGGAGCAGA
N40851    NGAGNGGCCG TTGAGTGTCG CAGGCGGCGA GGGCGCGAGT GAGGAGCAGA
N39876    GCA.GGGCCG TTGAGTGTCG CAGGCGGCGA GGGCGCGAGT GAGGAGCAGA
R87894    .......... TTGAGTGTNG NAGGCGGCGA GGGCGCGAGT GAGGAGCAGA
H16866    ..ANGGGCCG TTGAGTGTCG CAGGCGGC.A GGGCN.GAGT GAGGAGCAGA
R34808    .......... .......... .......... .........G GAGGAGCAGA
T66058    .......... .......... .......... .......... ..........
N57450    GAAGNGGCCG TTGAGTGTCG CAGGCGGCGA GGGCGCGAGT GAGGAGCAGA
N57374    .......... .......... .......... .......... .......AGA
R35464    .......... .......... .......... .......... ..........
H94519    .......... .......... .......... .......... ..........
N39798    .......... .......... .......... .......... ..........
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
HC2982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (C n't)

```
          101                                                        150
Bikunin   CCCAGGCATC GCGCGCCGAG AAGNC GGGC GTCCCCACAC TGAAGGTCCG
N40851    CCCAGGCATC GCGCGCCGAG AAGNC.GGGC GTCCCCACAC TGAAGGTCCG
N39876    CCCAGGCATC GCGCGCCGAG AAGNC.GGGC NTCCCCACAC TGAAGGTCCG
R87894    CCCAGGCATC GCGCGCCGAG AAGGCCGGGC GTCCCCACAC TGAAGGTCCG
H16866    CCCAGGCATC GCGCGCCGAG AAGNC.GGGC GTCCCCACAC TGAAGGTCCG
R34808    CCCAGGCATC GCGCGCCGAG AAGNC.GGGC GTCCCCACAC TGAAGGTCCG
T66058    .......... .......... .......... .......... ..........
N57450    CCCAGGCATC GCGCGCCGAG AAGNC.GGGC GTCCCCACAC TGAAGGTCCG
N57374    CCCAGGCATC GCGCGCCGAG AAGNC.GGGC GTCCCCACAC TGAAGGTCCG
R35464    .......... .......... .......... .......... ..........
H94519    .......... .......... .......... .......... ..........
N39798    .......... .......... .......... .......... ..........
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
HC2982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T67439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
                151                                                 200
Bikunin   GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
N40851    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
N39876    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
R87894    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
H16866    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACG.T CCCGGAGCN.
R34808    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
T66058    .......... .......... .......... ...GGACCCT CCCGGAGCGT
N57450    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
N57374    GAAAGGCGAC TTCCGGGGGC TTTGGCACCT GGCGGACCCT CCCGGAGCGT
R35464    .......... .......... .......... .......... ..........
H94519    .......... .......... .......... .......... ..........
N39798    .......... .......... .......... .......... ..........
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
          201                                                       250
Bikunin   CGGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTTTG .AGGGGCTTC
N40851    CGGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTNTG .AGGGGCTTC
N39876    CGGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTTTG .AGGGGCTTC
R87894    CGGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTTTG .AGGGGCTTC
H16866    .GGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTTTG .AGGGGCTTC
R34808    CGGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTNTG GAGGGGCTTC
T66058    CGGCACCTGA ACGCGAGGC. CTCCATTGCG .GTGCGTGTG NAGGGGCTTC
N57450    CGGCACCTGA ACGCGAGGCG CTCCATTGCG CGTGCGTTTG .AGGGGCTTC
N57374    CGGCACCTGA ACGCGAGGC. CTCCATTGC. CGTGCGTTNG .AGGGGCTTC
R35464    .......... .......... .......... .......... ..........
H94519    .......... .......... .......... .......... ..........
N39798    .......... .......... .......... .......... ..........
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
HC2982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
          251                                                       300
Bikunin   CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTGG.CGTC GC.TG.CGCG
N40851    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTGG.CGTC GCCTG.CGCG
N39876    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTGG.CGTC GCCTG.CGCG
R87994    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTNG.CGTC GC.TN.CGCG
H16866    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTNG.CGTC GC.TGGCGCG
R34808    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTGGGCGTC GC.TG..GCG
T66058    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTGG.CGTC GC.TG.CGCG
N57450    CCGCACCT.G ATCGCGAGAC CCCAACGGCT GGTGG.CGTC GCCTG.CGCG
N57374    CCGGAACTTG ATCGCGAGAC CCCAACGGCT GGTGG.CGTC GC.TG.CGCG
R35464    .......... .......... .......... .......... ..........
H94519    .......... .......... .......... .......... ..........
N39798    .......... .......... .......... .......... ..........
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
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Figure 4C (Con't)

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          301                                                       350
Birunin   TC TCGGCTG AGCT GGCCA TGGCGCANT  GTTGC GGGC T GAGGC GG
N40851    TC.TCGGCTG AGCT.GGNCA TGTCG
N39876    TC.TCGGCTG AGCT.GGCCA TGGCGCACT. G.TGCGGNGC T.GAGGC.G
R87894    TC.TCGGCTG AGCTTGGCCA TGGCGCANT. GTTNC.GGGC T.NAGGC.GG
H16866    TTCTCGGCTG AGCT.GGCCA TGGCGCANT. GTTGC.GNGC T.GAGGC.GG
R34808    TCTTCGGCTG AGCTGGGCCA TGGCGCANTT GTTGC.GGGC T.GAGGC.GG
T66058    TC.TCGGCTG AGCT.GGCCA TGGCGCANT. GTTGC.GNGC T.GAGGC.GG
N57450    TC.TCGGCTG AGCT.GGCCA TGGCGCANT. GGTGC.GGGC TTGAGGC.GG
N57374    TCCTCGGCTG AGCT.GGCCA TGGCGCANT. GGTGCCGNGC T.GAGGCCGG
R35464    .......... .......... .......... .......... ....GGCCGG
H94519    .......... .......... .......... .......... ..........
N39798    .......... .......... .......... .......... ..........
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

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         351                                                400
Bikunin  AC  GG CG     TTTCTCG  CC TGCTGGG A TCGCT GC T CCTCTCT
R87894   ACG.
H16866   AC..CGNCGT TTTTCTTCG. CCTTGCTGGG ATTCGCTTGC TTCCTNTCTG
R34808   ACGCGGNCG. .TTTTTTCGN CCTTGCTGGG ATT.G..TG. ..NCTCTCTN
T66058   ...CGGNCG. .TTTTCTCG. CC.TGCTGGG A.TCGCT.GC T.CCTCTCT.
N57450   ANN.NGCCG. ..TTTCTCG. CC.TGCTGGG A.TCGCT.GC T.CCTCTCT.
N57374   AG..GGCCGG ..TTTCTCG. CCTTGCTGGG A.TCGCT.GC T.CCTCTCTG
R35464   .....GTCG. ..TTTCTCC. CCTGGCTGGG A.TCGCT.GC T.CCTCTCT.
H94519   .GCNGCGCG. ..TTNNTCG. CN.TGCTGGG A.TCGCT.GC A.CCTCTCT.
N39798   .......... .......... .....CTGGG ANTCGCT.GC T.CCTCTCT.
H87300   .......... .......... .......... .......... ..........
R74593   .......... .......... .......... .......... ..........
R31730   .......... .......... .......... .......... ..........
R34701   .......... .......... .......... .......... ..........
H02982   .......... .......... .......... ...  ..... ..........
R32676   .......... .......... .......... .......... ..........
T47439   .......... .......... .......... .......... ..........
R73968   .......... .......... .......... .......... ..........
H39840   .......... .......... .......... .......... ..........
H95233   .......... .......... .......... .......... ..........
H39841   .......... .......... .......... .......... ..........
N30199   .......... .......... .........  .......... ..........
T52966   .......... .......... .......... .......... ..........
N29508   .......... .......... .......... .......... ..........
N26919   .......... .......... .......... .......... ..........
N26910   .......... .......... .......... .......... ..........
H16757   .......... .......... .......... .......... ..........
N27732   .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
         401                                              450
Bikunin  GGGG TCCTG G  CGGCCGA CCGA GAACG CA GCA TCC ACGACTT CT
H16866   GGGGTTCCTG GG.CGGCCGA CCGA.GAACG CA.GCA.TCC AAGAATTTTT
R34808   GGGGTTC.TG GGGNGGCCGA NCGA.GAACG CAAGCA.TTC ACGA.TTT
T66058   GGGG.TCCTG G..CGGCCGA CCGA.GAACG CA.GCA.TCC ACGANTT.CT
N57450   GGGG.TCCTG G..CGGCCGA CCGA.GAACG CA.GCA.TCC ACGACTT.CT
N57374   GGGG.TCCTG G..CGGCCGA NCGAAGAANG CA.GCAATCC ANGAATTNCT
R35464   GGGG.TCCTG G.CCGGCCGA CCGA.GAACG CA.GCA.TCC ACGACTT.CT
H94519   GGGG.TCGNG G..CGGCCGA CCGA.GAACG CA.GCA.TCC ACGACTT.CT
N39798   GGGG.TCCTG G..CGGCCGA CCGA.GAACG CA.GCA.TCC ACGACTT.CT
H87300   .......... .......... .......... .......... ..........
R74593   .......... .......... .......... .......... ..........
R31730   .......... .......... .......... .......... ..........
R34701   .......... .......... .......... .......... ..........
H02982   .......... .......... .......... .......... ..........
R32676   .......... .......... .......... .......... ..........
T47439   .......... .......... .......... .......... ..........
R73968   .......... .......... .......... .......... ..........
H39840   .......... .......... .......... .......... ..........
H95233   .......... .......... .......... .......... ..........
H39841   .......... .......... .......... .......... ..........
N30199   .......... .......... .......... .......... ..........
T52966   .......... .......... .......... .......... ..........
N29508   .......... .......... .......... .......... ..........
N26919   .......... .......... .......... .......... ..........
N26910   .......... .......... .......... .......... ..........
H16757   .......... .......... .......... .......... ..........
N27732   .......... .......... .......... .......... ..........
```

Figure 4C (C n't)

```
          451                                                        500
Birunin   GCCTGGTGT  CGAAGGT GG TGGGCAGATG CCGGG CCTC CATGCCTA G
H16866    GCC
T66058    TCCTGGTGTT CGAAGG
N57450    GCCTGGTGT. CGAAGGT.GG TGGGCAG
N57374    GCCTGGTGTT CGAAAGTTGG TGGGCANATT CCGGGGCCTT CATGNCTAAG
R35464    GCCTGGTGT. CGAAGGT.GG TGGGCAGATT CCGGG.CCTC CATGCCTA.G
H94519    GCCTGGTGT. CGAAGGT.GG TGGGCAGATG CCGGG.CCTC CATGCCTA.G
N39798    GCCTGGTGT. CGAAGGT.GG TGGGCAGATG CCGGG.CCTC CATGCCTA.G
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
          501                                                       550
Bikunin   G TGGT GGT ACAATGTCAC TGACGGATCC TGCCAGCTGT TTGTGT ATG
N57374    GTTGGTTGGT ANAATGTNAA TTAANGATTC TTGCAACTGT TTGTGTNATT
R35464    G.TGGT.GGT ACAATGTCAC TGACGGATCC TGCCAGCTGT TTGTGT.ATG
H94519    G.TGGT.GGT ACAATGTCAC TGACGGATCC TGCCAGCTGT TTGTGT.ATG
N39798    G.TGGT.GGT ACAATGTCAC TGACGGATCC TGCCAGCTGT TTGTGT.ATG
H87300    .......... .......... .......... .......... ..........
R74593    .......... .......... .......... .......... ..........
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          551                                                       600
Bikunin   GGGGCTGTGA   CGGAAACA GCAATAATTA CCTGACCAAG GA GGAGTGC
N57374    GGGGCTNTTA AACGGAAANA .CAATAATNA CCTGACCAAA GAAGNAAT..
R35464    GGGGCTGTGA ..CGGAAACA GCAATAATTA CCTGACCAAG GA.GGAGTGC
H94519    GGGGCTGTGA ..CGGAAACA GCAATAATTA CCTGACCAAG GA.GGAGTGC
N39798    GGGGCTGTGA ..CGGAAACA GCAATAATTA CCTGACCAAG GA.GGAGTGC
H87300    GATTCGGCAC AGGGGAAACA GCAATAATTA CCTGACCAAG GA.GGAGTNC
R74593    .......... .......... GCAATAATTA CCTGACCAAG GA.GGAGTGC
R31730    .......... .......... .......... .......... .. .......
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ....
H39840    .......... .......... .......... .......... .. .
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... .. .......
N29508    .......... .......... .......... .......... .. .. ....
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ... ......
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ........
```

Figure 4C (C n't)

```
          601                                                       650
Bikunin   CTCAAGAAAT GTGCCACTGT CACAGAGAAT GCCACGGGTG ACCTGGCCAC
R35464    CTCAAGAAAT GTGCCACTGT CACAGAGAAT GCCACGGGTG ACCTGGCCAC
H94519    CTCAAGAAAT GTGCCACTGT CACAGAGAAT GCCACGGGTG ACCTGGCCAC
N39798    CTCAAGAAAT GTGCCACTGT CACAGAGAAT GCCACGGGTG ACCTGGCCAC
H87300    CTCAAGAAAT GTNCCACTGT CACAGAGAAT GCCACGGGTG ACCTGGCCAC
R74593    CTCAAGAAAT GTGCCACTGT CACAGAGAAT GCCACGGGTG ACCTGGCCAC
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .. ........ ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          651                                                       700
Bikunin   CAGCAGGAAT GCAGCGGATT CCTCTGTCCC AAGTGCTCCC AGAAGGCAGG
R35464    CAGCAGGAAT GCAGCGGATT CCTCTGTCCC AAGTGCTCCC AGAAGGCAGG
H94519    CAGCAGGAAT GCAGCGGATT CCTCTGTCCC AAGTGCTCCC AGAAGGCAGG
N39798    CAGCAGGAAT GCAGCGGATT CCTCTGTCCC AAGTGCTCCC AGAAGGCAGG
H87300    CAGCAGGAAT GCAGCGGATT CCTCTGTCCC AAGTGCTCCC AGAAGGCAGG
R74593    CAGCAGGAAT GCAGCGGATT CCTCTGTCCC AAGT.CTCCC AGAAGGCAGG
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .. ........ .......... ..........
N30199    .......... .......... .. ........ .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
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Figur 4C (Con't)

```
          701                                                       750
Bikunin   ATTCT GAAG ACCACTCCAG CGATATGTT  CAACTAT  G AAGAATACTG
R35464    ATTCTTGAAG ACCACTTCAG CGATATGTTT CAANTATTGN AAGAATAATT
H94519    ATTCT.GAAG ACCACTCCAG CGATATGTT. CAACTAT..G AAGAATACTG
N39798    ATTCT.GAAG ACCACTCCAG CGATATGTT. CAACTAT..G AAGAATACTG
H87300    ATTCT.GAAG ACCACTCCAG CGATATGTT. CAACTAT..G AAGAATACTG
R74593    ATTCT.GAAG ACCACTCCAG CGATATGTT. CAACTAT..G AAGAATACTG
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          751                                                       800
Bikunin    CACCGCCAA CGCAGT CAC TGGGCC TTG CCGTG CAT  CCTT CCCAC
R35464    GCACCGNCAA CGNATT
H94519    GCACCGCCAA CGCATT.CAC TGGGCC..TG C.GTG.CAT. CCTT.CCCAC
N39798    .CACCGCCAA CGCAGT.CAC TGGGCCTTG C.GTGGAAT. CCTTTCCCAC
H87300    .CACCGCCAA CGCAGTNCAC TGGGCC.TTG C.GTGGCATN CCTT.CCCAC
R74593    .CACCGCCAA CGCAGT.CAC TGGGCC.TTG CCGTG.CAT. CCTT.CCCAC
R31730    .......... .......... .......... .......... ..........
R34701    .......... .......... .......... .......... ..........
H02982    .......... .......... .......... .......... ..........
R32676    .......... .......... .......... .......... ..........
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

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          801                                                       850
Bikunin   GCTGGTACTT T GACGTGGA GA GGAACTC CTG CAATAA CTTCATCTAT
H94519    GCTGGTACTT T.GNCGT
N39798    GCTGGNAATT TNGACGTTGA GAAGGAAC
H87300    GCTNGTACTT T.GACGTGGA GA.GGAACTC CTGGCAATAA CTTCATCTAT
R74593    GCTGGTACTT T.GACGTGGA GA.GGAACTC CTG.CAATAA CTTCATCTAT
R31730    .......... ....... .. .......... .......... ...... ...
R34701    .......... .......... .......... .......... ..........
H02982    .......... ........GA GA.GGAACTC CTG.CAATAA CTTCATCTAT
R32676    .......... .......... .......... .........G ATTC..GGAA
T47439    .......... .......... .......... .......... ..........
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          851                                                       900
Bikunin   GGAGGCT GC CGGGGCAAT  AAGAACAG C TACCGCTC T GAGGAGGCCT
H87300    GGAGGCTTGC CGGGGCAATN AAGAACAGNT TACCGCTCTT TAGGAGGCCT
R74593    GGAGGCT.GC CGGGGCAAT. AAGAACAG.C TACCGCTC.T GAGGAGGCCT
R31730    .......... .......... .......G.C TACCGCTC.T GAGGACGCCT
R34701    .......... .......... .......... .......... ..........
H02982    GGNGGCT.GC CGGGG.AAT. AAGAACA.NC TACCGCTC.T GAGGAGGCCT
R32676    CGAGGA..GC CGGGGCAAT. AAGAACAG.C TACCGCTC.T GAGGAGGCCT
T47439    .......... .......... .......... .......... ....NGGCCT
R73968    .......... .......... .......... .......... ..........
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... ... .. ... .......... ..........
N26919    .......... .......... ..... ... ..... .. .. ..........
N26910    .......... .......... .... .    ..... ... ... ... .
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
          901                                                        950
Bikunin    GCA TGCTC CGCTGCTTCC GC                                CA GCAGGA
H87300    .GCA.T.... .
R74593    .GCA.TGCTC CGCTGCTTCC GC..... ..... .CA.GCAGGA
R31730    .GCA.TGCTC CGCTGCTTCC GC..... ..... .CA.GCAGGA
R34701    ..... .....TTCC GC..... ..... .CAAGCAGGA
H02982    .GCG.TGCTC CGCTGCTTCC GCTGTGTGTT CTCTTCCAGG CCA.GCAGGA
R32676    .GCA.TGCTC CGCTGCTTCC GC..... ..... .CA.GCAGGA
T47439    TGCAGTGCTC CGCTGCTTCC GC..... ..... .CA.GCAGGA
R73968    ..... ..... ..... ..... .....
H39840    ..... ..... ..... ..... .....
H95233    ..... ..... ..... ..... .....
H39841    ..... ..... ..... ..... .....
N30199    ..... ..... ..... ..... .....
T52966    ..... ..... ..... ..... .....
N29508    ..... ..... ..... ..... .....
N26919    ..... ..... ..... ..... .....
N26910    ..... ..... ..... ..... .....
H16757    ..... ..... ..... ..... .....
N27732    ..... ..... ..... ..... .....

          951                                                       1000
Bikunin   GAA TCCTCC CCTGCCCCTT GGCTCAAAGG TGGTGGTTC  TGG CGGGGC
R74593    GAA.TCCTCC CCTGCCCCTT GGCTCAAAGG TGGTGGTTC. TGGCGGGGC
R31730    GAA.TCCTCC CCTGCCCCTT GGCTCAAAGG TGGTGGTTC. TGG.CGGGGC
R34701    AAANTCCTCC CCTCCCCCTT GGCTCAAAGG TGGTGGTTCC TGG.CGGGGC
H02982    GAA.TCCTCC CCTGCCCCTT GGCTCAAAGG TGGTGGTTC. TGG.CGGGGC
R32676    GAA.TCCTCC CCTGCCCCTT GGCTCAAAGG TGGTGGTTC. TGG.CGGGGC
T47439    GAA.TCCTCC CCTGCCCCTT GGCTCAAAGG TGGTGGTTC. TGG.CGGGGC
R73968    ..... ..... ..... ..... ....CGGGGC
H39840    ..... ..... ..... ..... .....
H95233    ..... ..... ..... ..... .....
H39841    ..... ..... ..... ..... .....
N30199    ..... ..... ..... ..... .....
T52966    ..... ..... ..... ..... .....
N29508    ..... ..... ..... ..... .....
N26919    ..... ..... ..... ..... .....
N26910    ..... ..... ..... ..... .....
H16757    ..... ..... ..... ..... .....
N27732    ..... ..... ..... ..... .....
```

Figure 4C (Con't)

```
          1001                                                        1050
Bikunin   TGTT CGTGA TGGTGTTGAT CC T CTTCC TGGG AGCCT CC ATGGTC
R74593    TGTTTCGTGA TGGTGTTGAT CCTT..TTCC TGGGGAGCNT CC.ATGGTC
R31730    TGTT.CGTGA TGGTGTTGAT CC.T.CTTCC TGGGGAGCCT CC.ATGGTC.
R34701    TGTT.CGTGA TGGTGTTGAT CCCTCCTTCC CGGG.AGCCT CCCATGGTCC
H02982    TGTT.CGTGA TGGTGTTGAT CC.T.CTTCC TGGG.AGCCT CC.ATGGTN.
R32676    TGTT.CGTGA TGGTGTTGAT CC.T.CTTCC TGGG.AGCCT CC.ATGGTC.
T47439    TGTT.CGTGA TGGTGTTGAT CC.T.CTTCC TGGG.AGCCT CC.ATGGTC.
R73968    TGTT.CGTGA TGGTGTTGAT CC.T.CTTCC TGGG.AGCCT CC.ATGGTC.
H39840    .......... .......... .......... .......... ..........
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... .......... .......... ..........
T52966    .......... .......... .......... .......... ..........
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .... ..... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          1051                                                        1100
Bikunin   TACC TGAT  CCGGGTGGCA CGGAGG AAC C AGG AGCC TGCCCTGCGC
R74593    TAC..TGATT CCGGGTGGCA AGGAGG.AAC C.AGG.AGCC TGCCCTGCGC
R31730    TACC.TGAT. CCGGGTGGCA CGGAGGGAAC C.AGGGAGCC TGCCCTGCGC
R34701    TACCCTGAT. CCGGGTGGCA CGGAGG.AAC CCAGG.ANCC TGCCCTGCGC
H02982    TACC.TGAT. CCGGGTNGCA CGGAGG.AAC C.AGGGAGCC TGCCCTGCGN
R32676    TACC.TGAT. CCGGGTGGCA CGGAGG.AAC C.AGGGAGCC TGCCCTGCGC
T47439    TACC.TGAT. CCGGGTNGCA CGGAGG.AAC C.AGG.AGCC TGCCCTGCGC
R73968    TACC.TGAT. CCGGGTGGCA CGGAGG.AAC C.AGG.AGCC TGCCCTGCGC
H39840    .......... .......... ...GGG.AAC C.AGG.AGCC TGCCCTGCGC
H95233    .......... .......... .......... .......... ..........
H39841    .......... .......... .......... .......... ..........
N30199    .......... .......... ..GAGGAACC C.ANG.AGCT TGCCCTTGCC
T52966    .......... .......... .......... .......... .... ....
N29508    .......... .......... .......... .......... ..........
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... ..... ... ..........
```

Figure 4C (Con't)

```
          1101                                                      1150
Bikunin   ACCG TCT G GAGCTCCGGA GATGACAAGG  AGCAGCTGG  TGAAGAAC
 R74593   ANCG.TCT.G GAGCTTCGGA GATGACAAGG GNT
 R31730   ACCG.TCTGG GAGCTCCGGA GATGACAAGG GAGCAGCTGC GTGAAGAAC.
 R34701   ACCG.TCT.G GAGCTCCGGA GATGACAAGG .AGCAGCTGG .TGAAGAAC.
 H02982   ACCG.TCTNG GAGCTCCGGA GATGACAAGG .AGCAGCTGG .TGAAGAAC.
 R32676   ACCG.TCTGG GAGCTCCGGA GATGACAAGG GAGCAGCTGG .TGAAGAAC.
 T47439   ACCG.TCT.G GAGCTCCGGA GATGACAAGG .AGCAGCTGG .TGAAGAAC.
 R73968   ACCG.TCT.G GAGCTCCGGA GATGACAAGG .AGCAGCTGG .TGAAGAAC.
 H39840   ACCGGTCT.G GAGCTCCGGA GATGACAAGG .AGCAGCTGG .TGAAGAAC.
 H95233   .......... .......... .......... .......... ..........
 H39841   .......... .......... .......... .......... ..........
 N30199   ACCG.TCT.G GAGCTCCGGA GATNACAANG .AGCAGCTGN .TGAAGAACC
 T52966   .......... .......... .......... .......... ..........
 N29508   .......... .......... .......... .......... ..........
 N26919   .......... .......... .......... .......... ..........
 N26910   .......... .......... .......... .......... ..........
 H16757   .......... .......... .......... .......... ..........
 N27732   .......... .......... .......... .......... ..........

          1151                                                      1200
Bikunin   ACATATGT C CTGT GACCG CCCTGT CGC C AAGAGG A CT GGGGAA
 R31730   ACATATGTTC CTGTTGACCG NCCTGTTCGC C.AAGAGG.A TTGGGGGAA.
 R34701   ACATATGT.C CTGT.GACCG CCCTGT.CGC C.AAGAGG.A CT.GGGGAA.
 H02982   ACATATGT.C CTGT.GACCG NCCTGTTCGN C.AAGAGG.A CTNGGGGAAA
 R32676   ACATATGTTC CTGTTGACCG CCCTGTTCGC C.AAGAGGGA NTGGGGGAA.
 T47439   ACATATGT.C CTGT.GACCG CCCTGT.CGC C.AAGAGG.A CT.GGGGAA.
 R73968   ACATATGT.C CTGT.GACCG CCCTGT.CGC C.AAGAGG.A CT.GGGGAA.
 H39840   ACATATGT.C CTGT.GACCG CCCTGT.CGC C.AAGAGG.A CT.NGGGAA.
 H95233   .......... .......... .......... .......... ..........
 H39841   .......... .........G. CCCTGT.CGC CCAAAAGG.A CT.GGGGAA.
 N30199   ACATATGT.C CTGT.GACCG CCCTNT.CGC C.AAGAGG.A CT.GGGNAAA
 T52966   .......... .......... .......... .......... ..........
 N29508   .......... .......CC. CCCTNT.CGC C.AAGAGG.A CT.GGG.AA.
 N26919   .......... .......... .......... .......... ..........
 N26910   .......... .......... .......... .......... ..........
 H16757   .......... .......... .......... .......... ..........
 N27732   .......... .......... .......... .......... ..........
```

Figure 4C (Con't)

```
          1201                                                        1250
Bikunin   GGGAGGGG AGACTAT G  TGT GA GCT TTTTTT  AA A TAGA  GG
R31730    .GGGAGGGGG A
R34701    .GGGAGGGG. AGACTAT.G. TGT.GA.GCT TTTTTT..AA A.TA
H02982    GGGGAGGGG. AGATTAT.G. TGTTGA.GTT TTTTTT..AA ANTAG
R32676    GGGGAGGGGG AGANTATTGT TGTTGA.GNT TTTTTTTAAA ATTAGGAGGG
T47439    .GGGAGGGG. AGACTAT.G. TGT.GA.GCT TTTTTT..AA A.TAGA..GG
R73968    .GGGAGGGG. AGACTAT.G. TGT.GA.GCT TTTTTT..AA A.TAGA..GG
H39840    .GGGAGGGG. AGACTAT.G. TGT.GA.GCT TTTTTT..AA A.TAGA..GG
H95233    .......... .......... .......... .......... ..........
H39841    .GGGAGGGGA AAACNAT.G. TGT.GAACCT TTTTTT.AAA A.TAGA..GG
N30199    .GGGAGGNG. AGACTAT.G. TGT.AA.GCT TTTTTT..AA A.TAGA..GG
T52966    .......... .......... .......... .......... ..........
N29508    .GGGAGGGG. AGACTA..G. TGT.GA.GCT TTTTTT..AA A.TAGA..GG
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          1251                                                        1300
Bikunin   GATTGACTC  GGATTTG A GT GATC A  TTAGGG  CT GAGGTCTGTT
R32676    GNTTGANTTC GGGNTTTTNA GTTGATCCAT TTAGGGGGNT GAG
T47439    GATTGACTC. .GGATTTG.A GT.GATC.A. TTAGGG..CT GAGGTCTNTT
R73968    GATTGACTC. .GGATTTG.A GT.GATC.A. TTAGGG..CT GAGGTCTGTT
H39840    GATTGACTC. .GGATTTG.A GT.GATC.A. TTAGGG..CT GAGGTCTGTT
H95233    .......... .......... ........A. TTAGGG..CT GAGGTCTGTT
H39841    GATTGACTC. .GGATTTG.A GT.GATC.A. TTAGGG..CT GAGGTCTGTT
N30199    GATTGACTC. .GGATTTGGA GT.GATC.A. TTAGGG..CT GAGGTCTGTT
T52966    .......... .......... .......... .......... ..........
N29508    GATTGACTC. .GGATTTG.A GT.GATCNA. TTAGGG..CT GAGGTCTGTT
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .......... .......... ..........
N27732    .......... .......... .......... .......... ..........

          1301                                                        1350
Bikunin   TCTCTGGGAG GTAGGACGGC TGCTTCC TG G TC TGGCA  GGGATGGG
T47439    TCTCTNGGAG GTAGGACGA
R73968    TCTCTGGGAG GTAGGACGGC TGCTTCC TG GGTCTTGGCA .GGGATGGGG
H39840    TCTCTGGGAG GTAGGACGGC TGCTTCC TG G.TC.TGGCA .GGGATGGG.
H95233    NCTCTGGGAG NTAGGACGGC TGCTTTCCTG G.TC.TGGCA .GGGATGGG.
H39841    TCNCTGGGAG GTAGGACGGC TGCTGCCCTG G.TC.TGGCA .GGGATGGG.
N30199    TCTCTGGGAG GTAGGACGGC TGCTTCC.TG G.TC.TGGCA .GGGATGGG.
T52966    .......... .......... ..........  ..TC.TGGCA .GGGATGGG.
N29508    TCTCTGGGAG GTAGGACGGC TGCTTCA.TG G.TC.TGGCA .GGGATGGG
N26919    .......... .......... .......... .......... ..........
N26910    .......... .......... .......... .......... ..........
H16757    .......... .......... .........G G.TC.TGGCA .GGGATGGG.
N27732    .......... .......... .....GGGTG GGTCCTGNCA AGGNATGGGG
```

Figure 4C (C n't)

```
          1351                                                    1400
Bikunin   TTTG CTTTG G AAATCCTC T AGGAGGCT CCTCCT CGC ATGG CC TG
R73968    TTTG.CTTTG GGAAATCCTC TTNGGAGGCT CCTCCTTCGC ATGGGCCTTG
H39840    TTTG.CTTTG GAGAATCCTC T.ANGAGGCT CCTCCT.CGC ATGG.CC.TG
H95233    TTTG.CTTTG G.AAATCCTC T.AGGAGGCT CCTCCT.CGC ATGG.CC.TG
H39841    TTTG.CTTTG G.AAANCCNC T.AGGAGGCT CCTCCT.CGC ATGG.CC.TG
N30199    TTTG.CTTTG G.AAATCCTC T.AGGAGGCT CCTCCTTCGC ATGG.CC.TG
T52966    TTTG.CTTTG G.AAATCCTC T.AGGAGGCT CCTCCT.CGC ATGG.CC.TG
N29508    TTTG.CTTTG G.AAATCCTC T.AGGAGGCT CCTCCT.CGC ATGG.CC.TG
N26919    ..........  ..........  ....GAGGCT CCTCCT.CGC ATGG.CC.TG
N26910    .....CTTTT GNAAATCCTC T.AGGAGGCT CCTCCT.CGC ATGG.CC.TG
H16757    TTTGCCTTTG G.AAANCCTC T.AGGAGGCT CCTCCT.CGC ATGG.CC.TG
N27732    TTTG.CTTTG G.AAATCCTC TTAGGAGGCT CCTCCT.CGC ATGG.CC.TG

          1401                                                    1450
Bikunin   CAGT CT GG CAGCAG CCC CGAGTTGTTT  CC TCGCTG ATC GATTTC
R73968    CAGT.CTNGG CAGCANCCCC CGAGTTTTTT TCCTTCGCTG ATCCGATTTC
H39840    CAGT.CT.GG CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ATC.GATTTC
H95233    CAGTTCT..G CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ATC.GATTTC
H39841    CAGT.CT.GG CAGCAG.CCC CGAGTTGTTN .CC.TCGCTG ATC.GATNTC
N30199    CAGT.CT.GG CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ATC.GATTTC
T52966    CAGT.CT.GG CAGCAG..CC CGAGTTGTTT .CC.TCGCTG ATC.GATTTC
N29508    CAGT.CT..G CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ATC.GATTTC
N26919    CAGT.CTTGG CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ANC.GATTTC
N26910    CAGT.CT..G CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ATCGGATTTC
H16757    CAGTNCT.GG CAGCAGACCC CGAGTTGTTT .CC.TCGCTG ATC.GATTTC
N27732    CAGT.CT.GG CAGCAG.CCC CGAGTTGTTT .CC.TCGCTG ANC.GATTTC

          1451                                                    1500
Bikunin   TTT CCTCCA GGTAG  AGT TTTC TTTG  CTTATGTTGA ATTCCATTGC
R73968    TTTTCCTCCA GGTAAGAATT TTTCTTTT
H39840    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
H95233    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
H39841    TTT.CCCCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ANTCCATTGC
N30199    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
T52966    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
N29508    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
N26919    TTT.CCNCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
N26910    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
H16757    TTTACCCCCA GGTAG..AGT TTTCCTTTGN CTTATGTTGA ATTCCATTGC
N27732    TTT.CCTCCA GGTAG..AGT TTTC.TTTG. CTTATGTTGA ATTCCATTGC
```

Figure 4C (Con't)

```
          1501                                                    1550
Bikunin   CTCTTTT CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT GT
H39840    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTTTGT
H95233    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
H39841    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
N30199    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
T52966    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
N29508    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
N26919    CTCTTTT.CN CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
N26910    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
H16757    CTCTTTTACT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT
N27732    CTCTTTT.CT CATCACAGAA GTGATGTTGG AATCGTTTCT TTTGTTT.GT

          1551                                                    1600
Bikunin   CTGATTTATG G  TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
H39840    CTGATTTATG GGTTTTTTTT AAGTAT
H95233    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
H39841    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
N30199    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
T52966    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
N29508    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
N26919    CTGATTTATG G..TTTTTTT AAGTNTAAAC AAAAGTTTTT TATTAGCATT
N26910    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
H16757    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT
N27732    CTGATTTATG G..TTTTTTT AAGTATAAAC AAAAGTTTTT TATTAGCATT

          1601                                                    1650
Bikunin   CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
H95233    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAA
H39841    CTGAAAGAAG GAAAGTAAAN TGTACAAGTT TAATAAAAAG GGGCCTTCCC
N30199    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
T52966    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
N29508    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
N26919    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
N26910    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
H16757    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC
N27732    CTGAAAGAAG GAAAGTAAAA TGTACAAGTT TAATAAAAAG GGGCCTTCCC

          1651                                          1689
Bikunin   CTTTAG AAT AAAAAAAAAA AAAAAAAAAA AAAAAAAAA
H39841    CTTTAA.
N30199    CTTTAG.AAT AAA
T52966    CTTTAGGAAT NAAAANAAAA AAGGGTG
N29508    CTTTAG.AAT AAATTTCAGC ATGTGCTTTC AA
N26919    CTTTAG.AAT AAAAAAAAAA AAAAAAAAAA A
N26910    CTTTAG.AAT AAATTTCAGC ATGTGCTTTC AAAAAA
H16757    CTTTAG.AAT AAAAAAAAAA AAAAAAAAAA AAAAAA
N27732    CTTTAG.AAT AAAAAAAAAA AAAAAAAAAA AAAAAAAAA
```

FIGURE 4D


```
EST consens MLRAEADGVS RLLGSLLLSG VLAADRERSI HDFCLVSKVV GRCRASMPRW  50
EST consens WYNVTDGSCQ LFVYGGCDGN SNNYLTKEEC LKKCATVTEN ATGDLATSRN 100
EST consens AADSSVPSAP RRQDSEDHSS DMFNYEEYCT ANAVTGPCRA SFPRWYFDVE 150
EST consens RNSCNNFIYG GCRGNKNSYR SEEACMLRCF RQQENPPLPL GSKVVVLAGL 200
EST consens FVMVLILFLG ASMVYLIRVA RRNQERALRT VWSCGDDKEQ LVKNTYVL   248
```

FIGURE 4E


```
cDNA                                                                    ACC    3
translation                                                             T    -47

cDNA         TGATCGCGAG ACCCCAACGG CTGGTGGCGT CGCCTGCGCG TCTCGGCTGA    53
translation  .  S  R  D   P  N  G   W  W  R   R  L  R  V   S  A  E   -30

cDNA         GCTGGCCATG GCGCAGCTGT GCGGGCTGAG GCGGAGCCGG GCGTTTCTCG   103
translation  L  A  M   A  Q  L  C   G  L  R   R  S  R   A  F  L  A   -13

cDNA         CCCTGCTGGG ATCGCTGCTC CTCTCTGGGG TCCTGGCGGC CGACCGAGAA   153
translation   L  L  G   S  L  L   L  S  G  V   L  A  A   D  R  E      4

cDNA         CGCAGCATCC ACGACTTCTG CCTGGTGTCG AAGGTGGTGG GCAGATGCCG   203
translation  R  S  I  H   D  F  C   L  V  S   K  V  V  G   R  C  R    21

cDNA         GGCCTCCATG CCTAGGTGGT GGTACAATGT CACTGACGGA TCCTGCCAGC   253
translation   A  S  M   P  R  W  W   Y  N  V   T  D  G   S  C  Q  L   38

cDNA         TGTTTGTGTA TGGGGGCTGT GACGGAAACA GCAATAATTA CCTGACCAAG   303
translation   F  V  Y   G  G  C   D  G  N  S   N  N  Y   L  T  K      54

cDNA         GAGGAGTGCC TCAAGAAATG TGCCACTGTC ACAGAGAATG CCACGGGTGA   353
translation  E  E  C  L   K  K  C   A  T  V   T  E  N  A   T  G  D    71

cDNA         CCTGGCCACC AGCAGGAATG CAGCGGATTC CTCTGTCCCA AGTGCTCCCA   403
translation   L  A  T   S  R  N  A   A  D  S   S  V  P   S  A  P  R   88

cDNA         GAAGGCAGGA TTCTGAAGAC CACTCCAGCG ATATGTTCAA CTATGAAGAA   453
translation   R  Q  D   S  E  D   H  S  S  D   M  F  N   Y  E  E     104

cDNA         TACTGCACCG CCAACGCAGT CACTGGGCCT TGCCGTGCAT CCTTCCCACG   503
translation  Y  C  T  A   N  A  V   T  G  P   C  R  A  S   F  P  R   121

cDNA         CTGGTACTTT GACGTGGAGA GGAACTCCTG CAATAACTTC ATCTATGGAG   553
translation   W  Y  F   D  V  E  R   N  S  C   N  N  F   I  Y  G  G  138

cDNA         GCTGCCGGGG CAATAAGAAC AGCTACCGCT CTGAGGAGGC CTGCATGCTC   603
translation   C  R  G   N  K  N   S  Y  R  S   E  E  A   C  M  L     154

cDNA         CGCTGCTTCC GCCAGCAGGA GAATCCTCCC CTGCCCCTTG GCTCAAAGGT   653
translation  R  C  F  R   Q  Q  E   N  P  P   L  P  L  G   S  K  V   171

cDNA         GGTGGTTCTG GCGGGGCTGT TCGTGATGGT GTTGATCCTC TTCCTGGGAG   703
translation   V  V  L   A  G  L  F   V  M  V   L  I  L   F  L  G  A  188

cDNA         CCTCCATGGT CTACCTGATC CGGGTGGCAC GGAGGAACCA GGAGCGTGCC   753
translation   S  M  V   Y  L  I   R  V  A  R   R  N  Q   E  R  A     204

cDNA         CTGCGCACCG TCTGGAGCTT CGGAGATGA                          782
translation  L  R  T  V   W  S  F   G  D                               213
```

FIGURE 4F


```
cDNA         GCACGAGTTG GGAGGTGTAG CGCGGCTCTG AACGCGCTGA GGGCCGTTGA  50
cDNA         GTGTCGCAGG CGGCGAGGGC GCGAGTGAGG AGCAGACCCA GGCATCGCGC 100
cDNA         GCCGAGAAGG CCGGGCGTCC CCACACTGAA GGTCCGGAAA GGCGACTTCC 150
cDNA         GGGGGCTTTG GCACCTGGCG GACCCTCCCG GAGCGTCGGC ACCTGAACGC 200
cDNA         GAGGCGCTCC ATTGCGCGTG CGCGTTGAGG GGCTTCCCGC ACCTGATCGC 250
cDNA         GAGACCCCAA CGGCTGGTGG CGTCGCCTGC GCGTCTCGGC TGAGCTGGCC 300
cDNA         ATGGCGCAGC TGTGCGGGCT GAGGCGGAGC CGGGCGTTTC TCGCCCTGCT 350
translation  M  A  Q  L   C  G  L   R  R  S   R  A  F  L   A  L  L  -11

cDNA         GGGATCGCTG CTCCTCTCTG GGGTCCTGGC GGCCGACCGA GAACGCAGCA 400
translation  G  S  L   L  L  S  G   V  L  A   A  D  R   E  R  S  I   -

cDNA         TCCACGACTT CTGCCTGGTG TCGAAGGTGG TGGGCAGATG CCGGGCCTCC 450
translation   H  D  F   C  L  V   S  K  V  V   G  R  C   R  A  S   23

cDNA         ATGCCTAGGT GGTGGTACAA TGTCACTGAC GGATCCTGCC AGCTGTTTGT 500
translation  M  P  R  W   W  Y  N   V  T  D   G  S  C  Q   L  F  V   40

cDNA         GTATGGGGGC TGTGACGGAA ACAGCAATAA TTACCTGACC AAGGAGGAGT 550
translation  Y  G  G   C  D  G  N   S  N  N   Y  L  T   K  E  E  C   57

cDNA         GCCTCAAGAA ATGTGCCACT GTCACAGAGA ATGCCACGGG TGACCTGGCC 600
translation   L  K  K   C  A  T   V  T  E  N   A  T  G   D  L  A   73

cDNA         ACCAGCAGGA ATGCAGCGGA TTCCTCTGTC CCAAGTGCTC CCAGAAGGCA 650
translation  T  S  R  N   A  A  D   S  S  V   P  S  A  P   R  R  Q   90

cDNA         GGATTCTGAA GACCACTCCA GCGATATGTT CAACTATGAA GAATACTGCA 700
translation  D  S  E   D  H  S  S   D  M  F   N  Y  E   E  Y  C  T 107

cDNA         CCGCCAACGC AGTCACTGGG CCTTGCCGTG CATCCTTCCC ACGCTGGTAC 750
translation   A  N  A   V  T  G   P  C  R  A   S  F  P   R  W  Y   123

cDNA         TTTGACGTGG AGAGGAACTC CTGCAATAAC TTCATCTATG GAGGCTGCCG 800
translation  F  D  V  E   R  N  S   C  N  N   F  I  Y  G   G  C  R  140

cDNA         GGGCAATAAG AACAGCTACC GCTCTGAGGA GGCCTGCATG CTCCGCTGCT 850
translation  G  N  K  N   S  Y  R   S  E  E   A  C  M  L   R  C  F 157

cDNA         TCCGCCAGCA GGAGAATCCT CCCCTGCCCC TTGGCTCAAA GGTGGTGGTT 900
translation   R  Q  Q  E   N  P  P   P  L  P   L  G  S  K   V  V  V   173

cDNA         CTGGCGGGGC TGTTCGTGAT GGTGTTGATC CTCTTCCTGG GAGCCTCCAT 950
translation  L  A  G  L   F  V  M   V  L  I   L  F  L  G   A  S  M   190

cDNA         GGTCTACCTG ATCCGGGTGG CACGGAGGAA CCAGGAGCGT GCCCTGCGCA 1000
translation  V  Y  L  I   R  V  A   R  R  N   Q  E  R   A  L  R  T 207

cDNA         CCGTCTGGAG CTCCGGAGAT GACAAGGAGC AGCTGGTGAA GAACACATAT 1050
translation   V  W  S   S  G  D   D  K  E  Q   L  V  K   N  T  Y   223

cDNA         GTCCTGTGAC CGCCCTGTCG CCAAGAGGAC TGGGGAAGGG AGGGGAGACT 1100
translation  V  L  *                                               225
```

FIGURE 4E (Con't)


```
cDNA        ATGTGTGAGC TTTTTTTAAA TAGAGGGATT GACTCGGATT TGAGTGATCA 1150
cDNA        TTAGGGCTGA GGTCTGTTTC TCTGGGAGGT AGGACGGCTG CTTCCTGGTC 1200
cDNA        TGGCAGGGAT GGGTTTGCTT TGGAAATCCT CTAGGAGGCT CCTCCTCGCA 1250
cDNA        TGGCCTGCAG TCTGGCAGCA GCCCCGAGTT GTTTCCTCGC TGATCGATTT 1300
cDNA        CTTTCCTCCA GGTAGAGTTT TCTTTGCTTA TGTTGAATTC CATTGCCTCC 1350
cDNA        TTTTCTCNAT CACAGAAGTG ATGTTGGAAT CGTTTCTTTT GTTTGTCTGA 1400
cDNA        TTTATGGTTT TTTTAAGTAT AAACAAAAGT TTTTTATTAG CATTCTGAAA 1450
cDNA        GAAGGAAAGT AAAATGTACA AGTTTAATAA AAAGGGGCCT TCCCCTTTAG 1500
cDNA        AATAAATTTC CAGCATGTTG CTTTCAAAAA AAAAAAAAAA AAAA
1550
```

FIGURE 4G


```
EST consens                                        MLR AEADGVSRLL GSLLLSGVLA  -1
PCR clone                                        MAQLCGL RRSRAFLALL GSLLLSGVLA  -1
λcDNA clon                                       MAQLCGL RRSRAFLALL GSLLLSGVLA  -1

EST consens ADRERSIHDF CLVSKVVGRC RASMPRWWYN VTDGSCQLFV YGGCDGNSNN  50
PCR clone   ADRERSIHDF CLVSKVVGRC RASMPRWWYN VTDGSCQLFV YGGCDGNSNN  50
λcDNA clone ADRERSIHDF CLVSKVVGRC RASMPRWWYN VTDGSCQLFV YGGCDGNSNN  50

EST consens YLTKEECLKK CATVTENATG DLATSRNAAD SSVPSAPRRQ DSEDHSSDMF 100
PCR clone   YLTKEECLKK CATVTENATG DLATSRNAAD SSVPSAPRRQ DSEDHSSDMF 100
λcDNA clone YLTKEECLKK CATVTENATG DLATSRNAAD SSVPSAPRRQ DSEDHSSDMF 100

EST consens NYEEYCTANA VTGPCRASFP RWYFDVERNS CNNFIYGGCR GNKNSYRSEE 150
PCR clone   NYEEYCTANA VTGPCRASFP RWYFDVERNS CNNFIYGGCR GNKNSYRSEE 150
λcDNA clone NYEEYCTANA VTGPCRASFP RWYFDVERNS CNNFIYGGCR GNKNSYRSEE 150

EST consens ACMLRCFRQQ ENPPLPLGSK VVVLAGLFVM VLILFLGASM VYLIRVARRN 200
PCR clone   ACMLRCFRQQ ENPPLPLGSK VVVLAGLFVM VLILFLGASM VYLIRVARRN 200
λcDNA clone ACMLRCFRQQ ENPPLPLGSK VVVLAGLFVM VLILFLGASM VYLIRVARRN 200

EST consens QERALRTVWS SGDDKEQLVK NTYVL                           225
PCR clone   QERALRTVWS FGD                                       213
λcDNA clone QERALRTVWS SGDDKEQLVK NTYVL                           225
```

Purification of Placental Bikunin using Superdex 75 Gel-Filtration

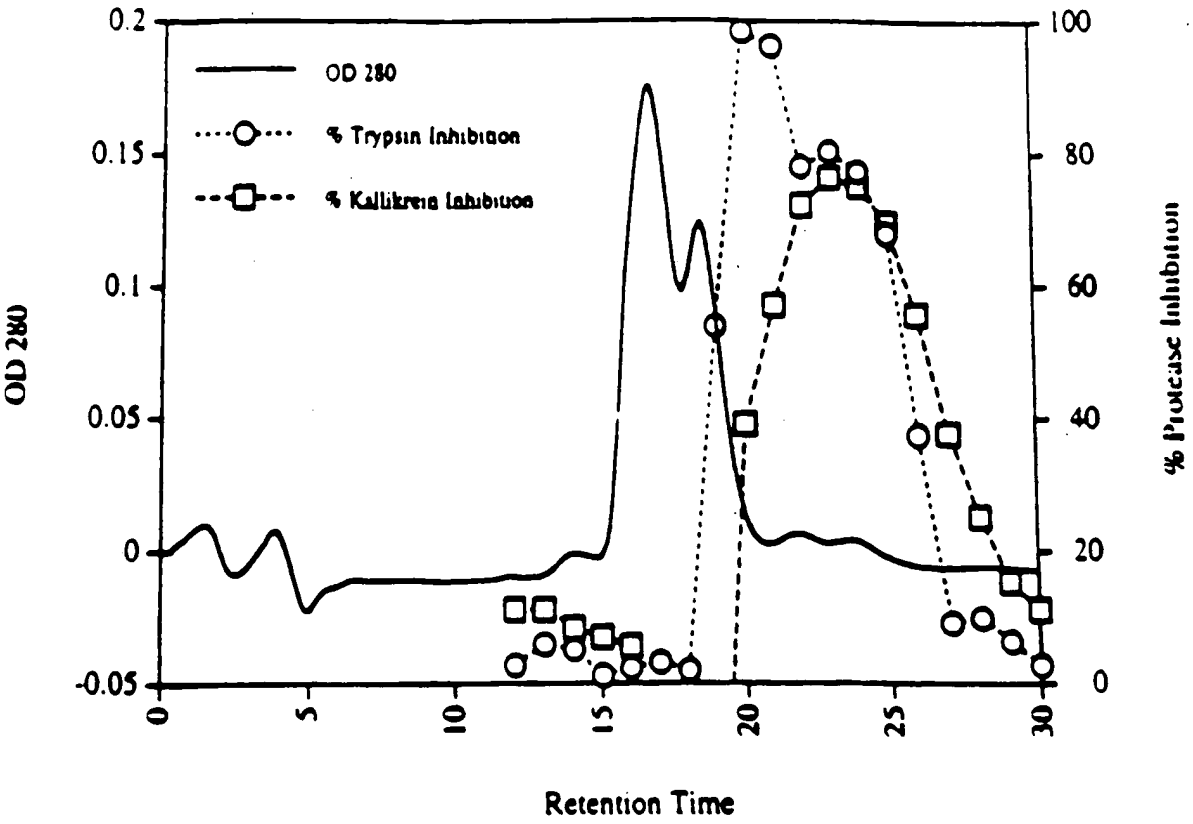
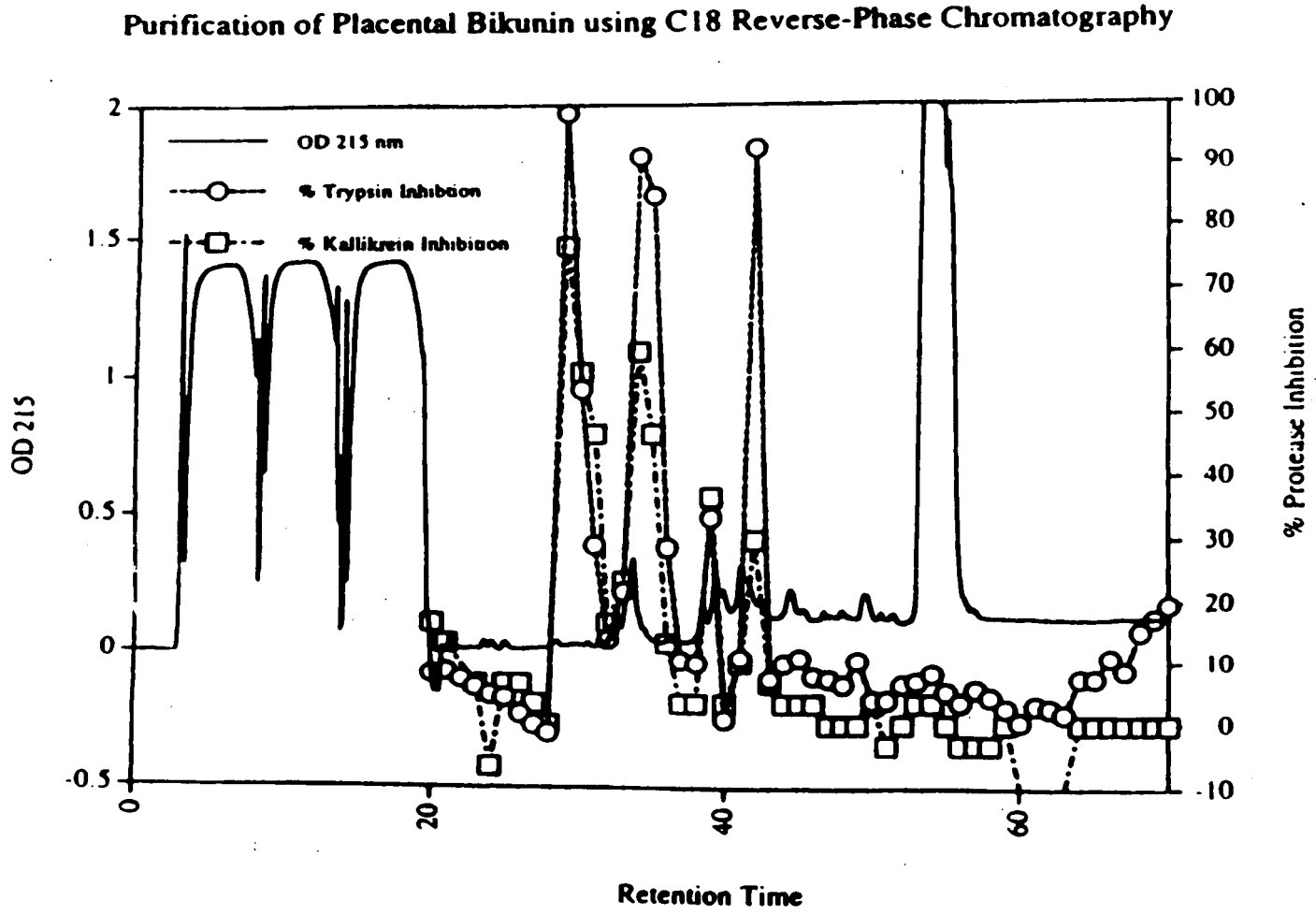


FIGURE 5

FIGURE 6



33

Figure 7

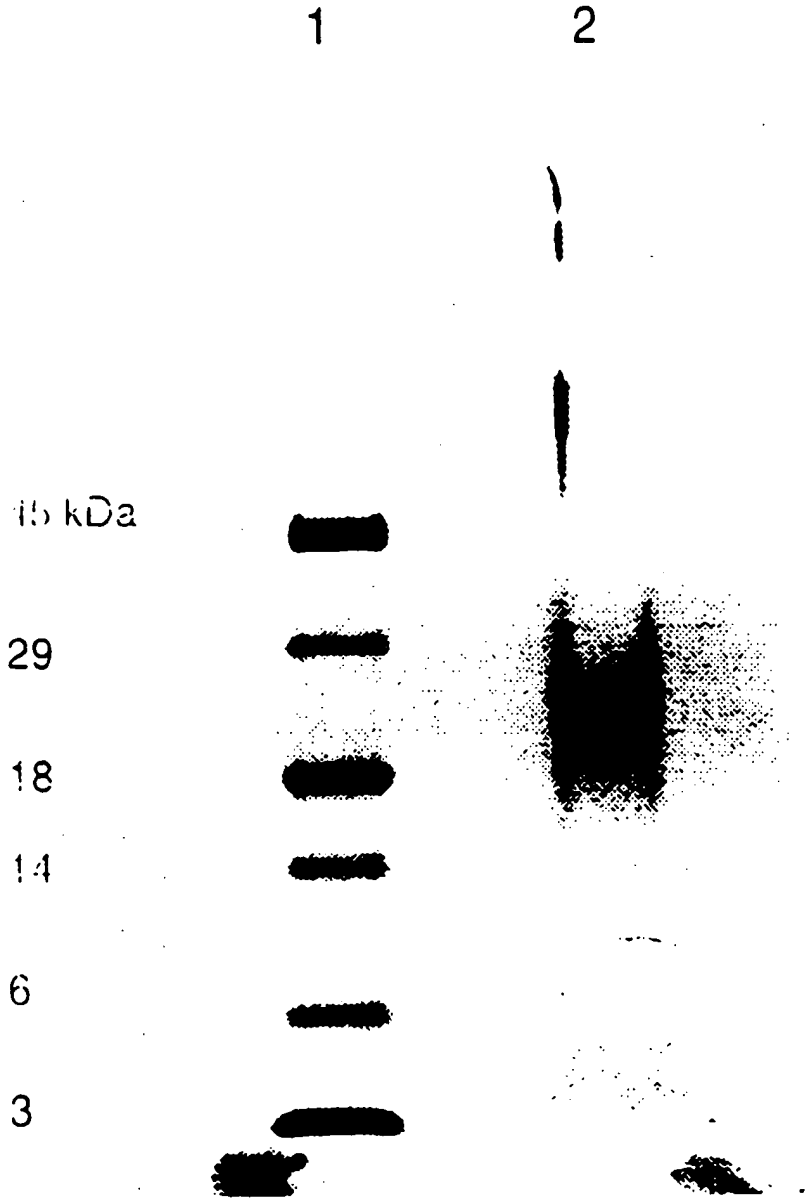


Figure 8A

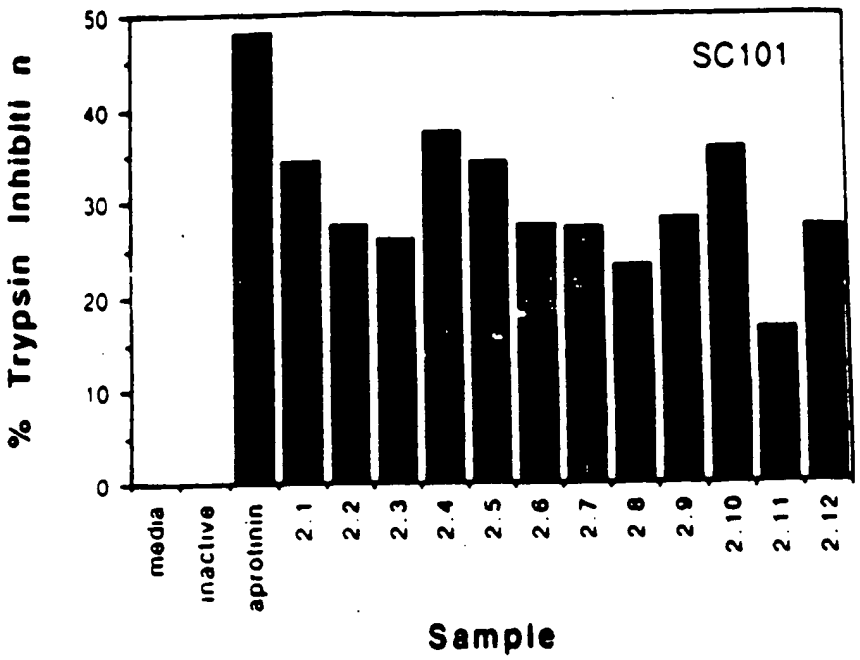


Figure 8B

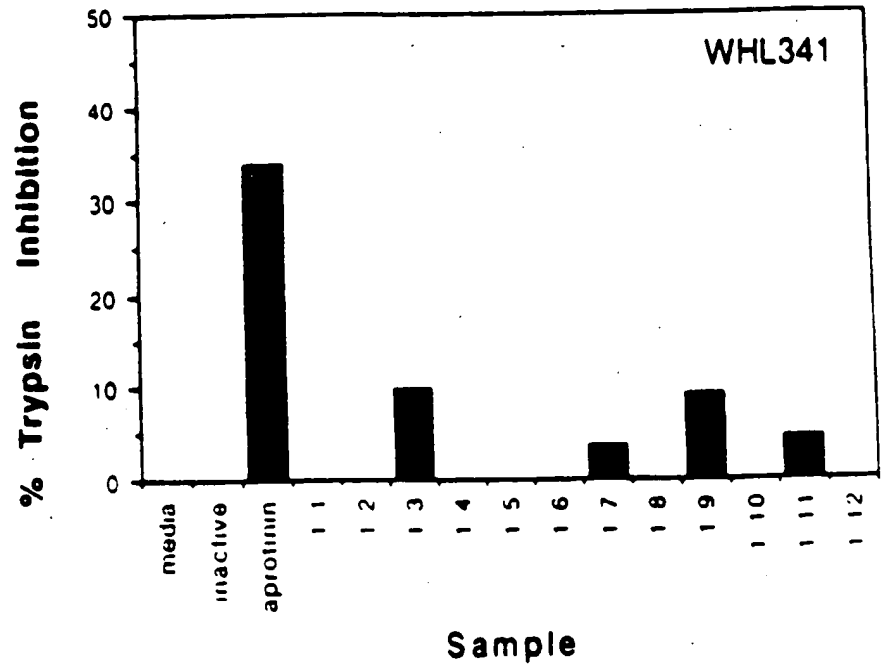


Figure 9A

SDS-PAGE

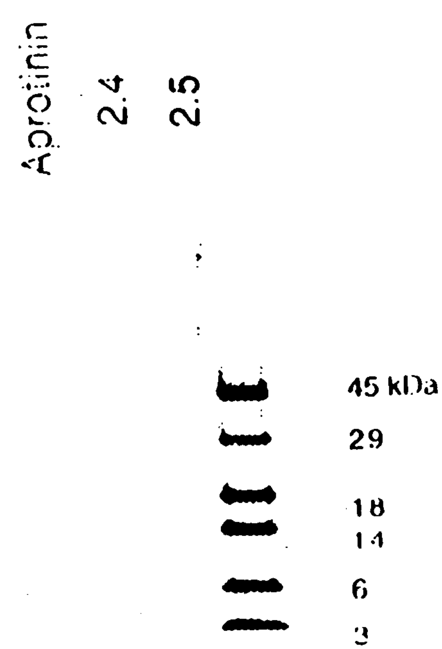


Figure 9B

Western

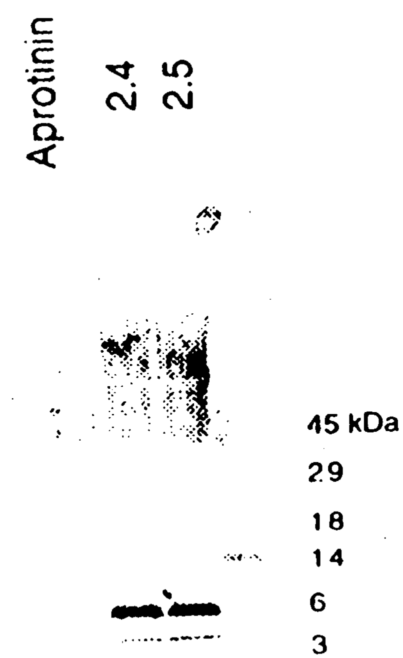


Figure 10

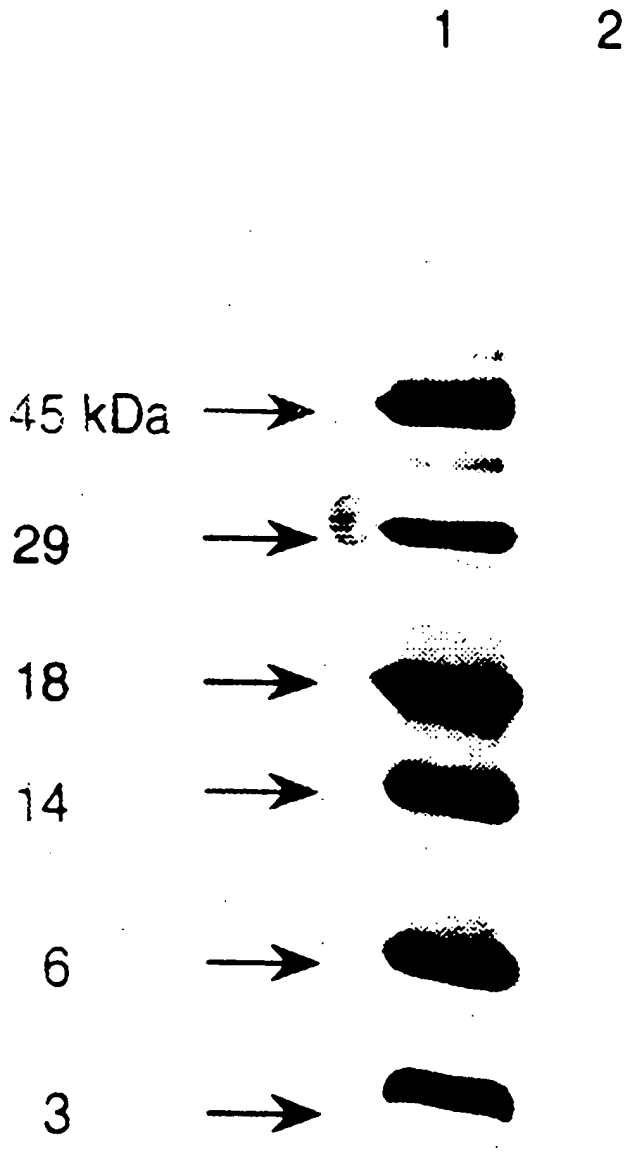


Figure 11A

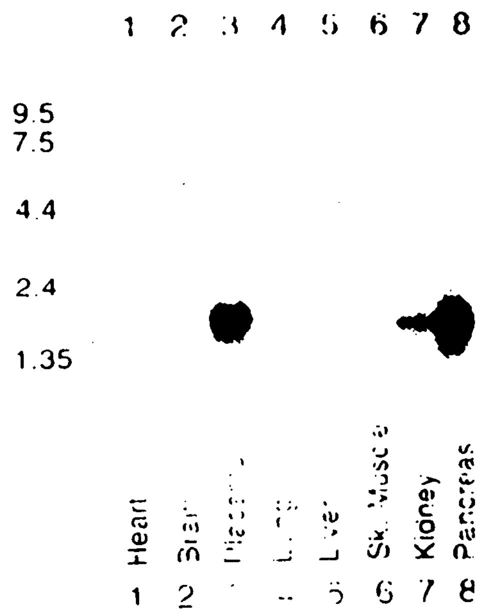


Figure 11B

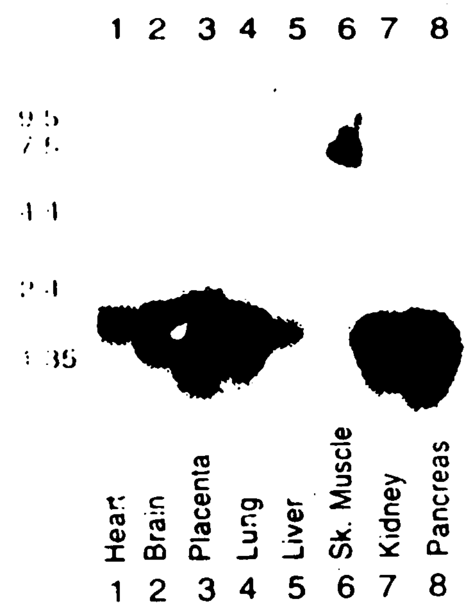


Figure 12A

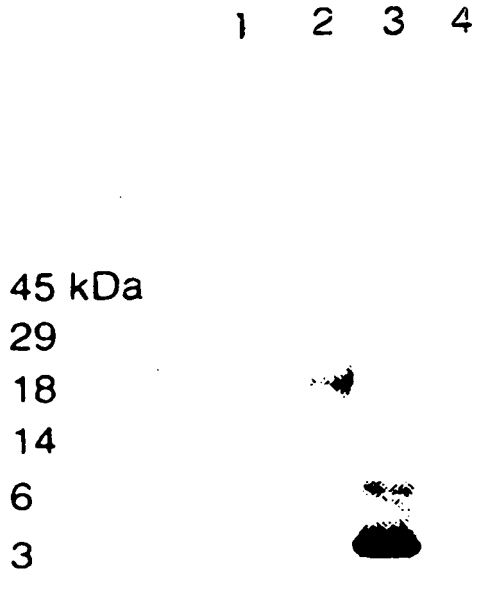


Figure 12B

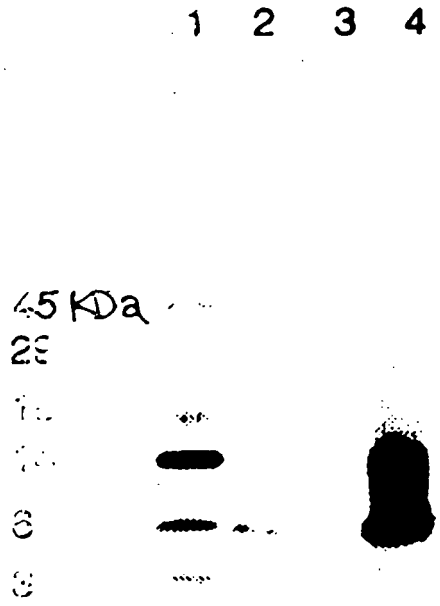


Figure 13

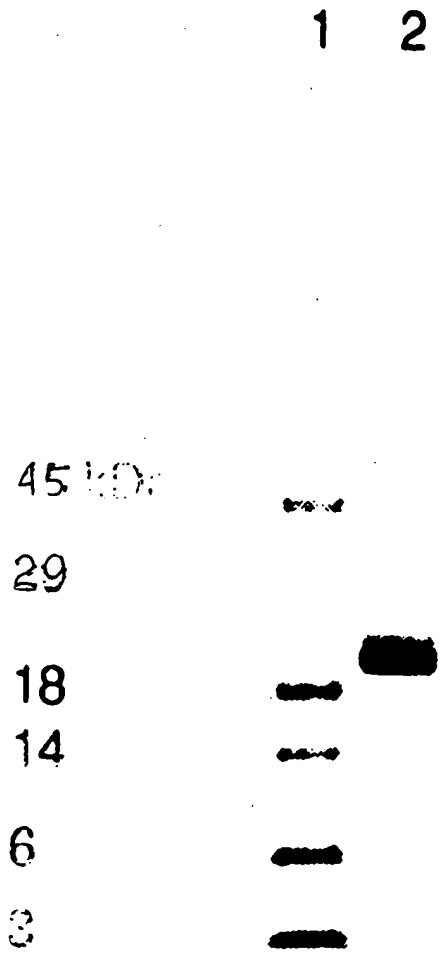


Figure 14

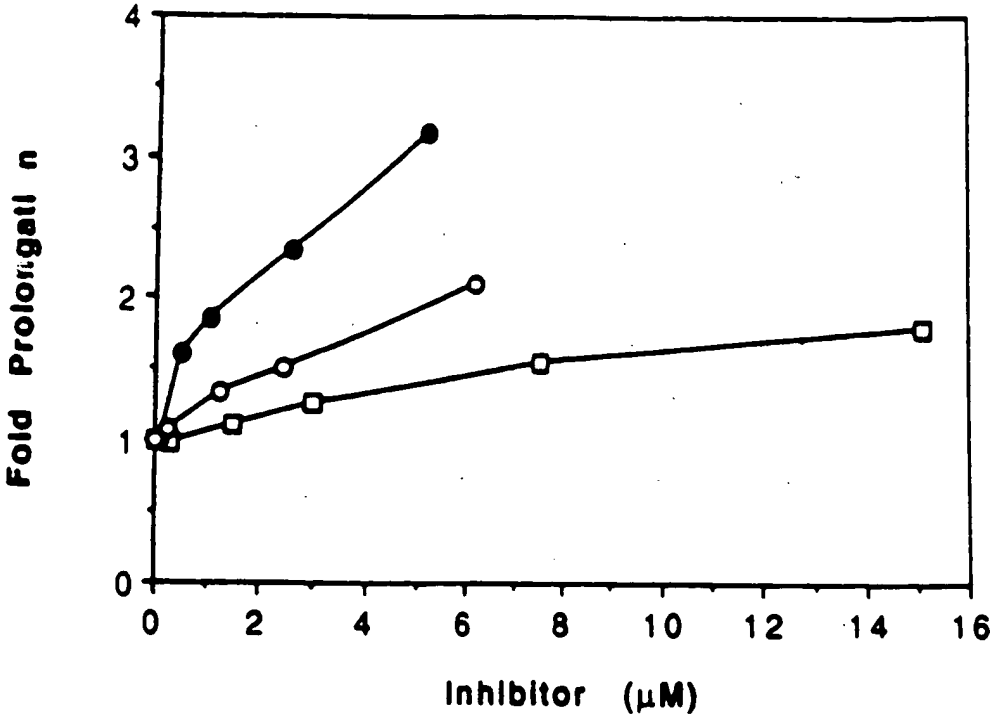


Figure 15 : The effect of BIKUNIN (0.2-2uM) and amiloride (100uM) on tracheal potential difference (TPD) 3 hours post treatment

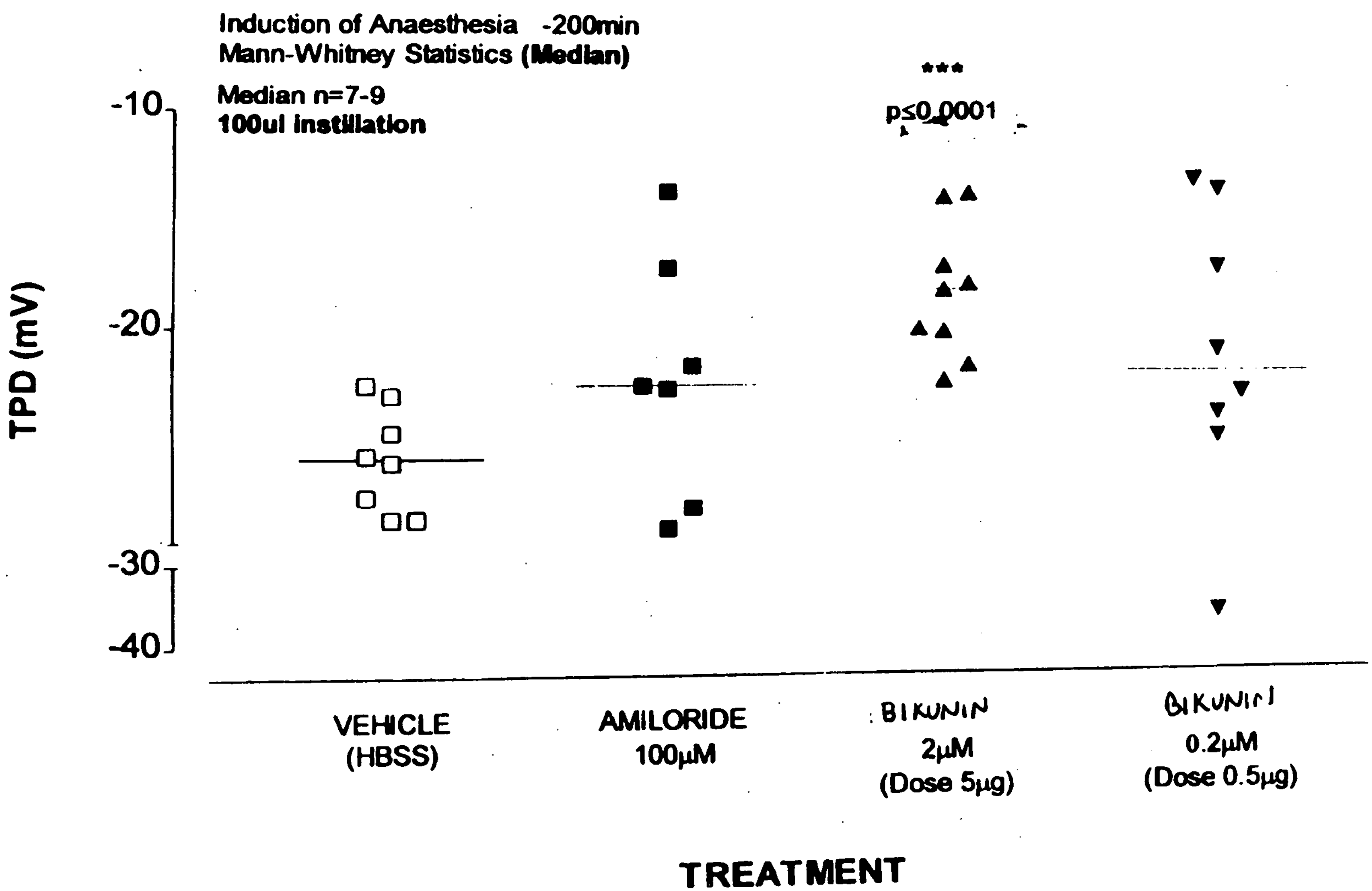
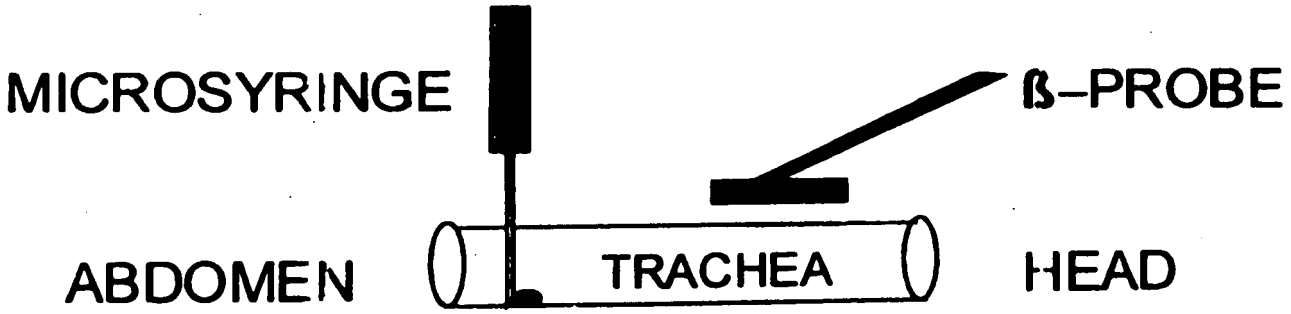
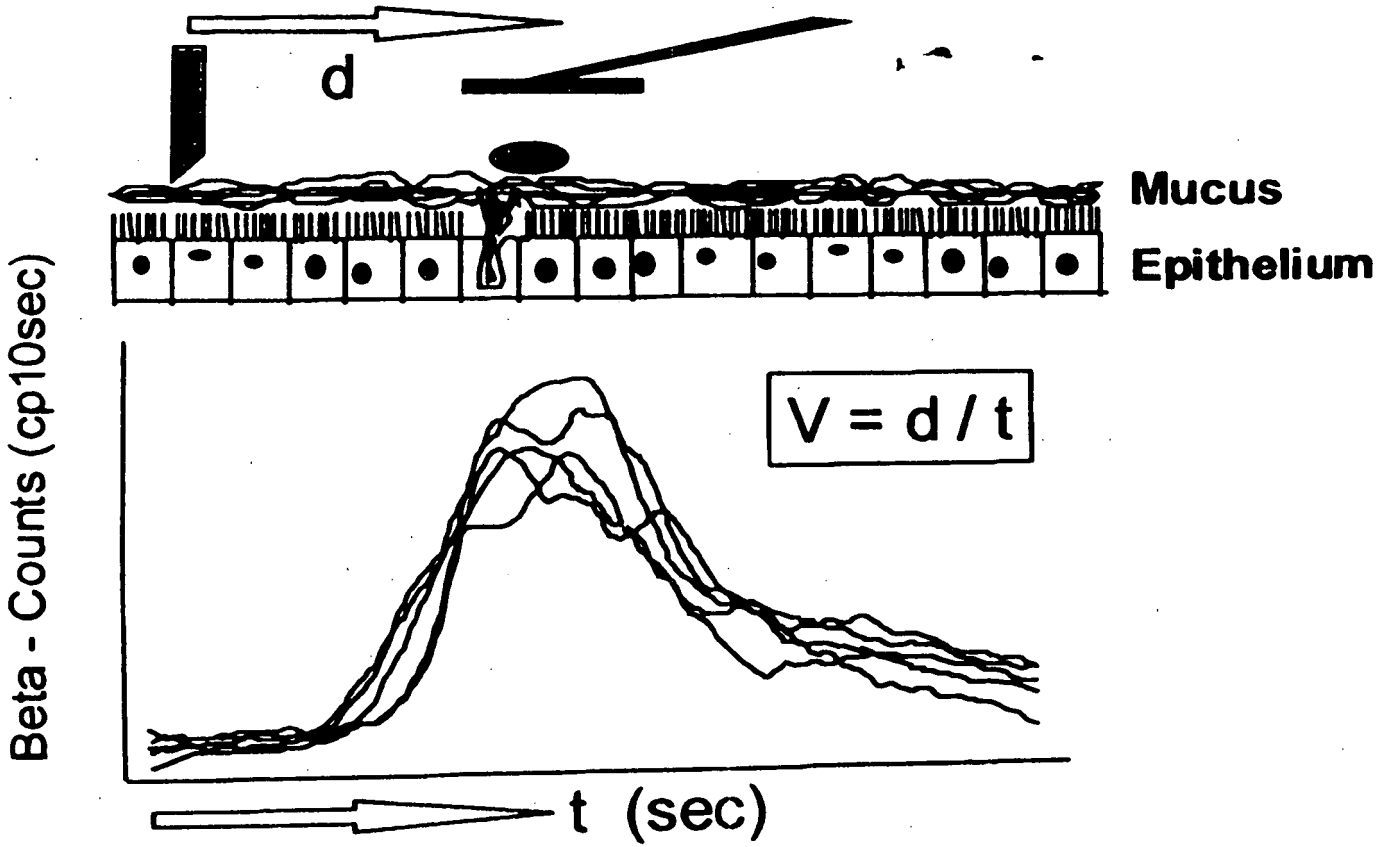


Figure 16 (a) : Diagram to show the arrangement of needle and Beta probe.



Longitudinal view

Figure 16 (b) : Counts detected by the probe as the ^{32}P-labeled Saccharomyces cerevisiae are transported along the tracheal mucociliary layer.



Sustained Increase in Tracheal Mucus Velocity In Vivo in Guinea Pig in Response to Bikunin

Figure 16(c)

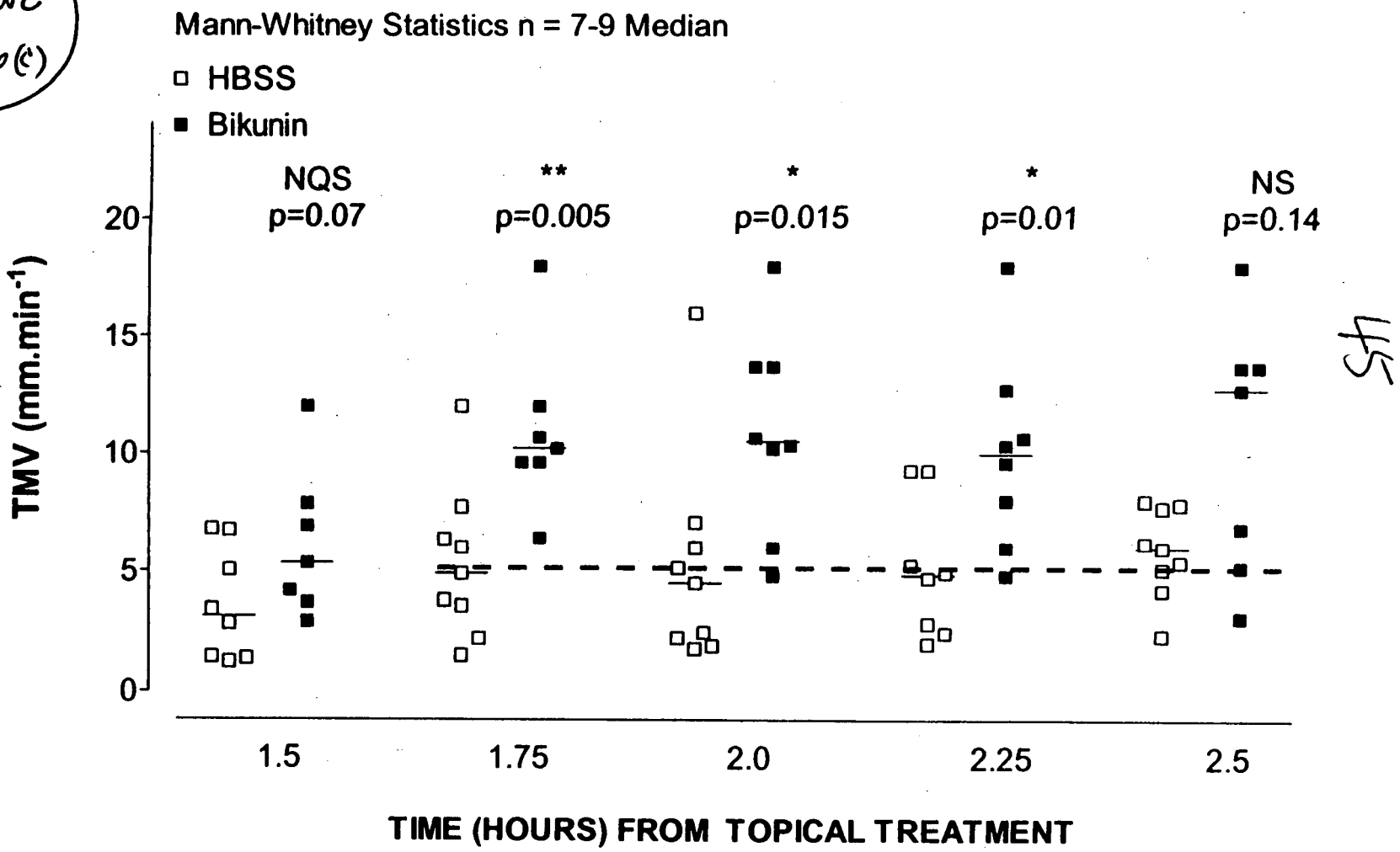


Figure 17 : Short circuit current (Isc) trace to show the action of BIKUNIN (70nM) on sodium dependent current in cultured normal human bronchial epithelial cells in vitro

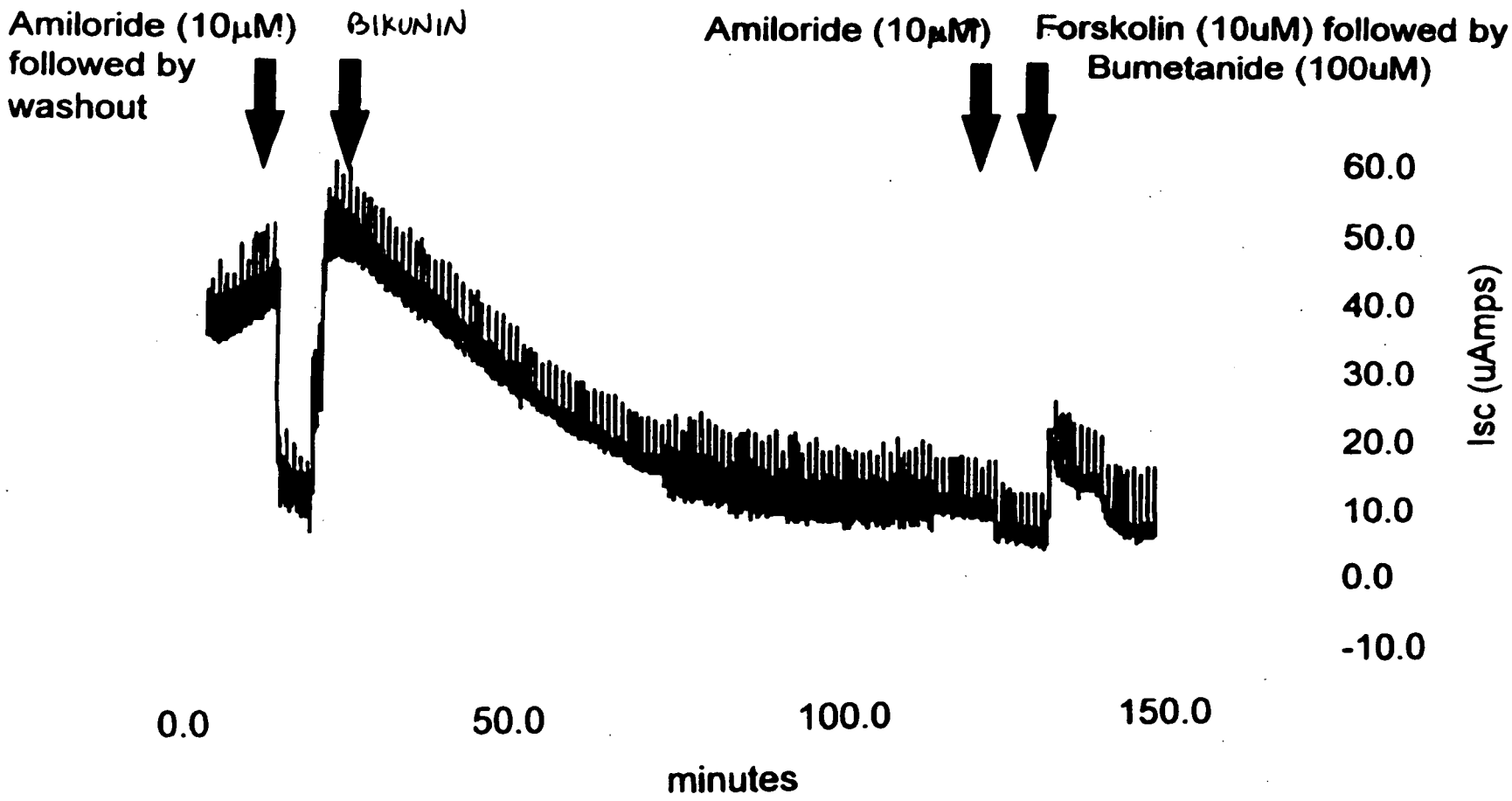


Figure 18 : The effect of a 5 min aerosol of hypertonic saline (14.4%) on tracheal mucus velocity (TMV) in the anaesthetised spontaneously breathing guinea-pig

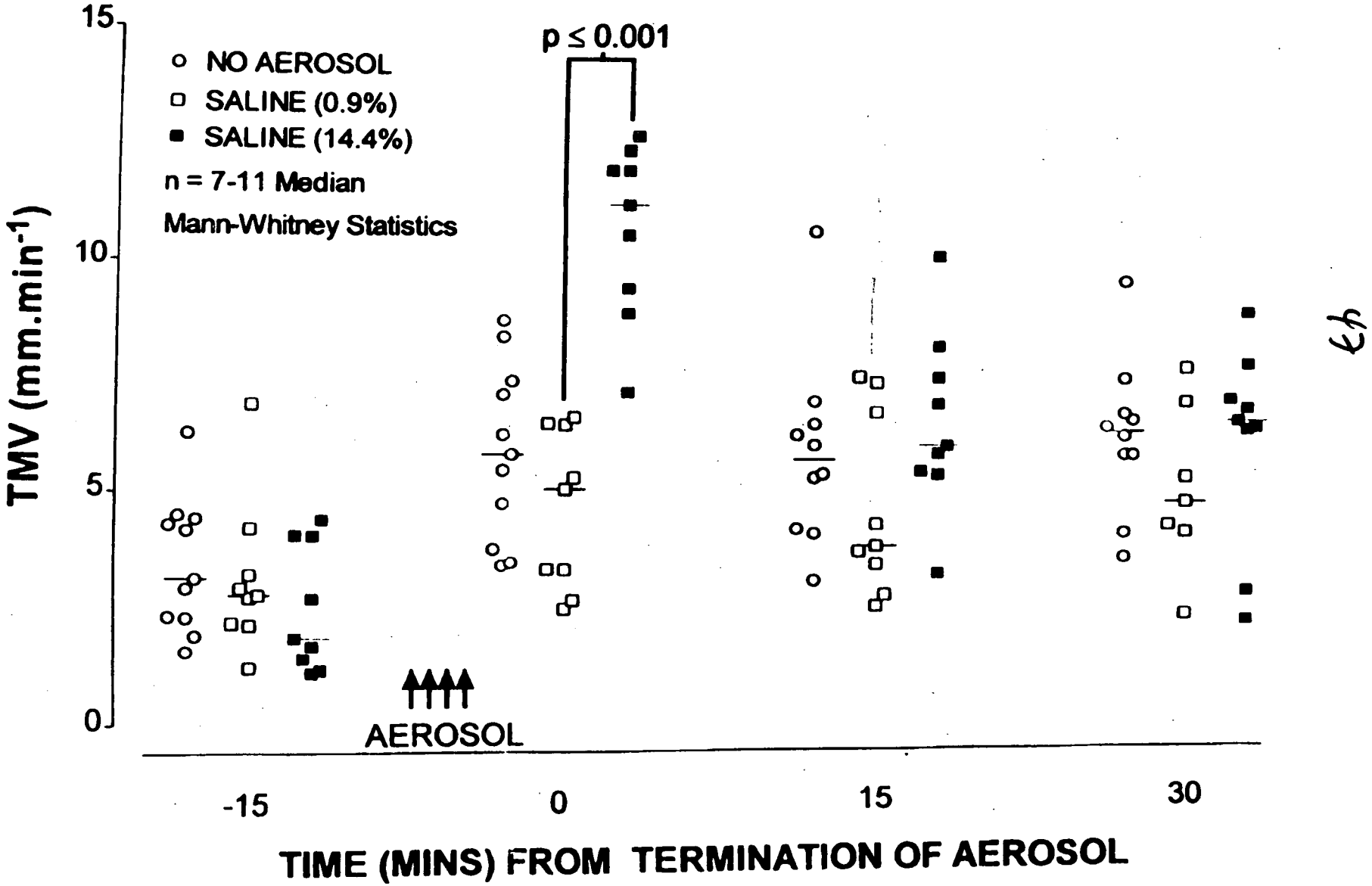
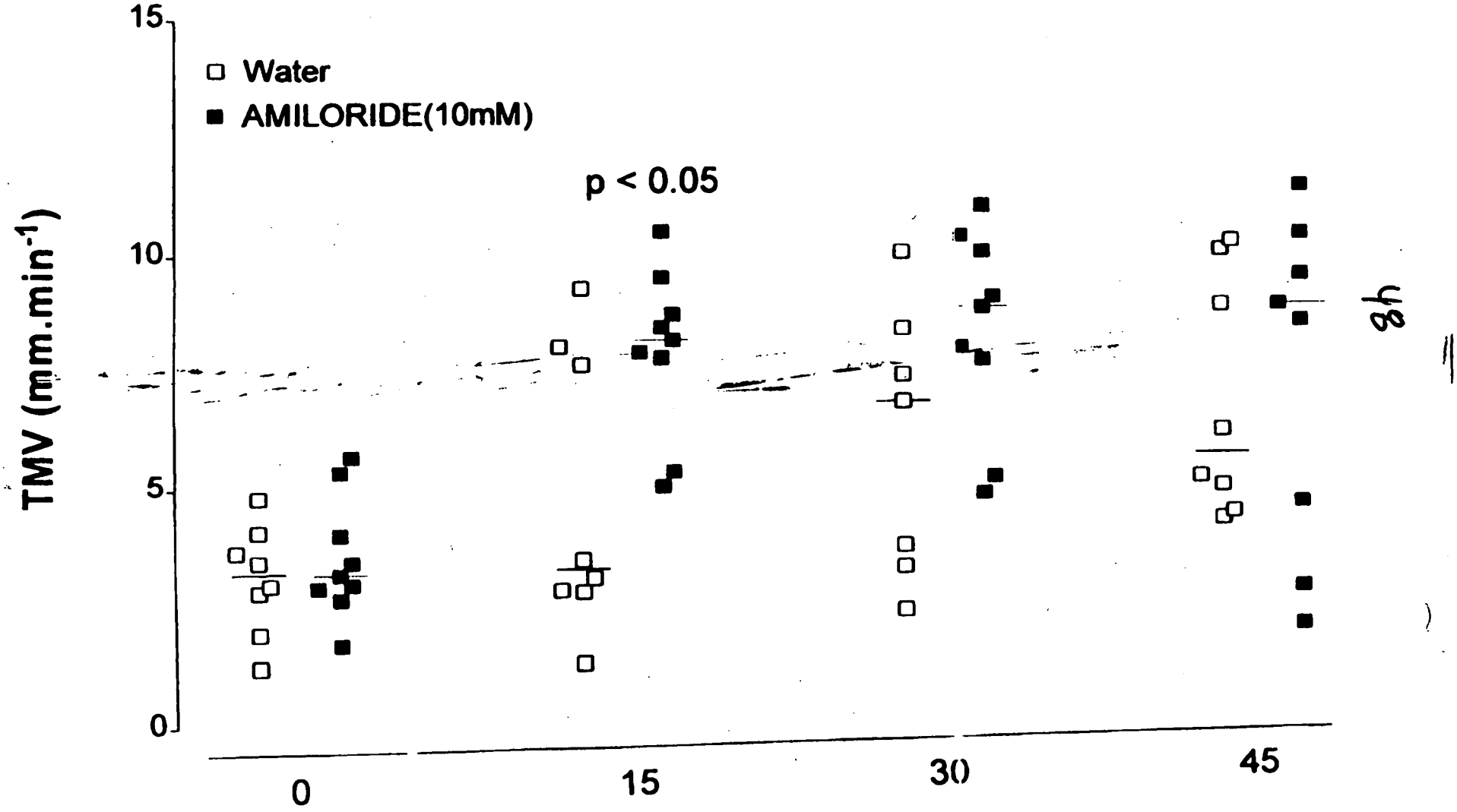


Figure 19 : The effect of a 20 min aerosol of amiloride (10mM) on tracheal mucus velocity (TMV) in the anaesthetised spontaneously breathing guinea-pig



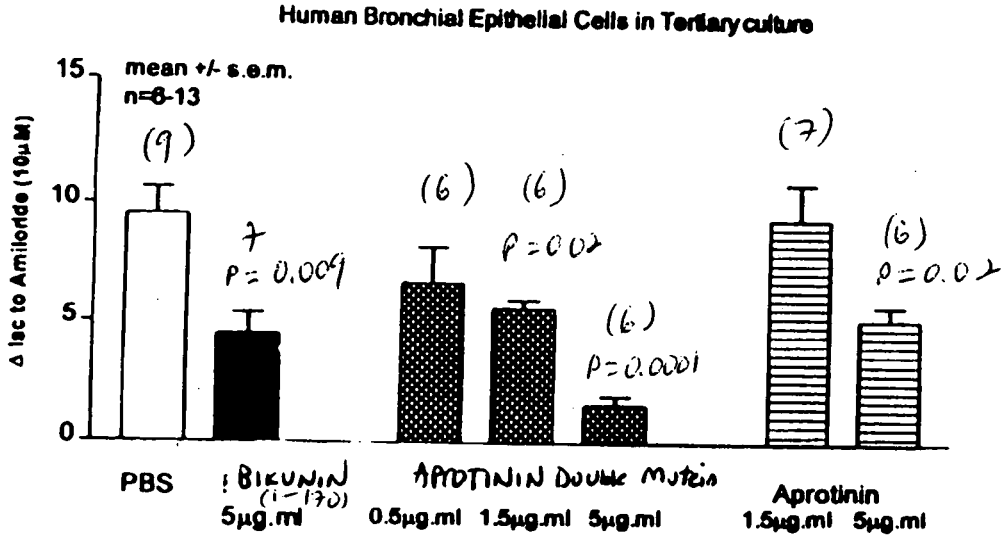


Figure 20 : Aprotinin double mutein (0.5 - 5 ug/mL), Bikunin (1-170) (5ug/mL) and Aprotinin (5 ug/mL) inhibit sodium dependent short circuit current (Isc) in normal human bronchial epithelial cells in vitro at 90 minutes following treatment.

Figure 21 Short circuit current (Isc) trace to show the action of aprotinin (1 mg/mL) on sodium dependent current in cultured cystic fibrosis human bronchial epithelial cells in vitro

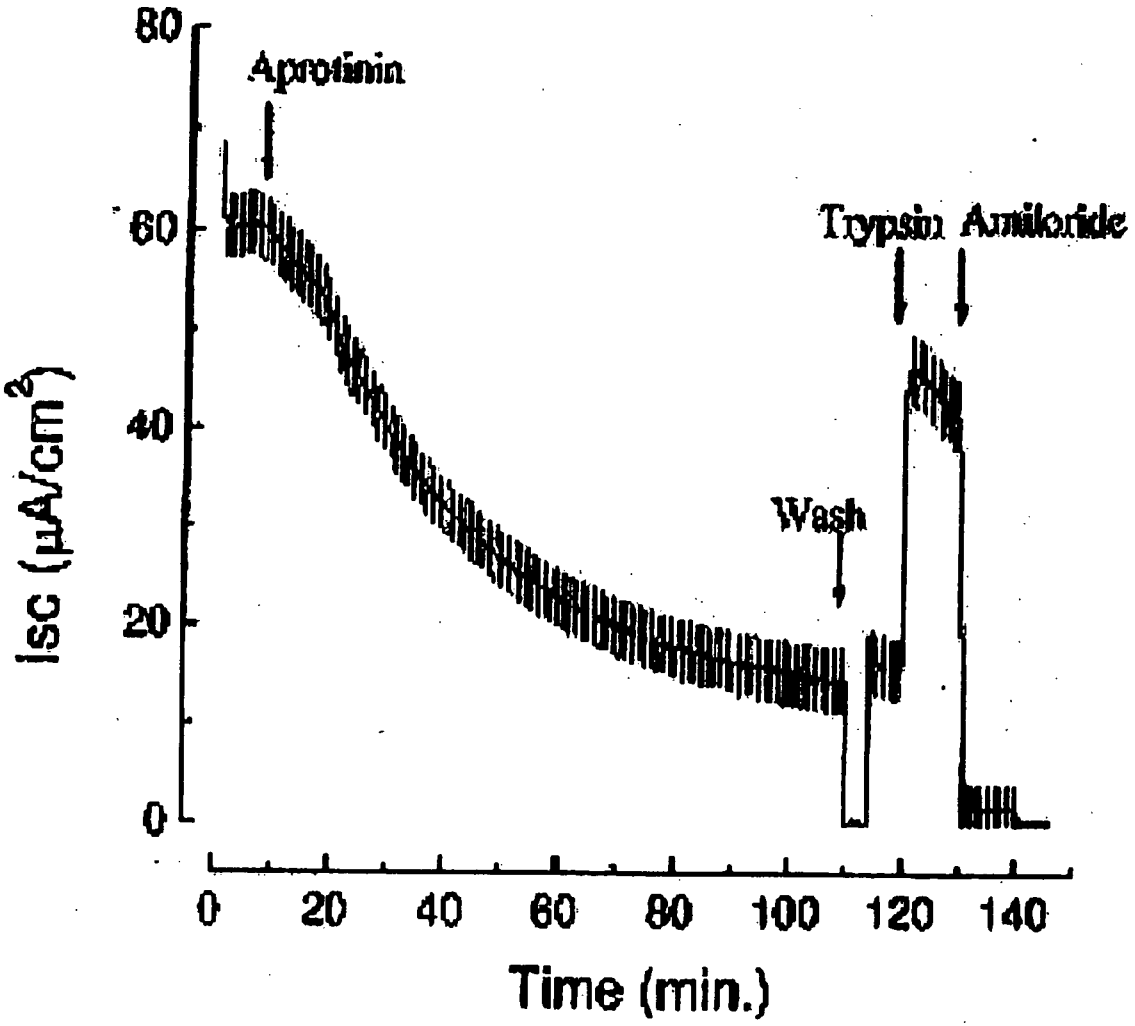


Figure 22 : 9mg CHO rhBikunin (1-170) aerosol (3 mL of 3 mg/mL) increased tracheal mucus velocity in sheep (n=6) at 0, 0.5, 3, 4, 5, 6, 7 & 8 hour time points compared to animals (n=6) receiving PBS vehicle aerosol

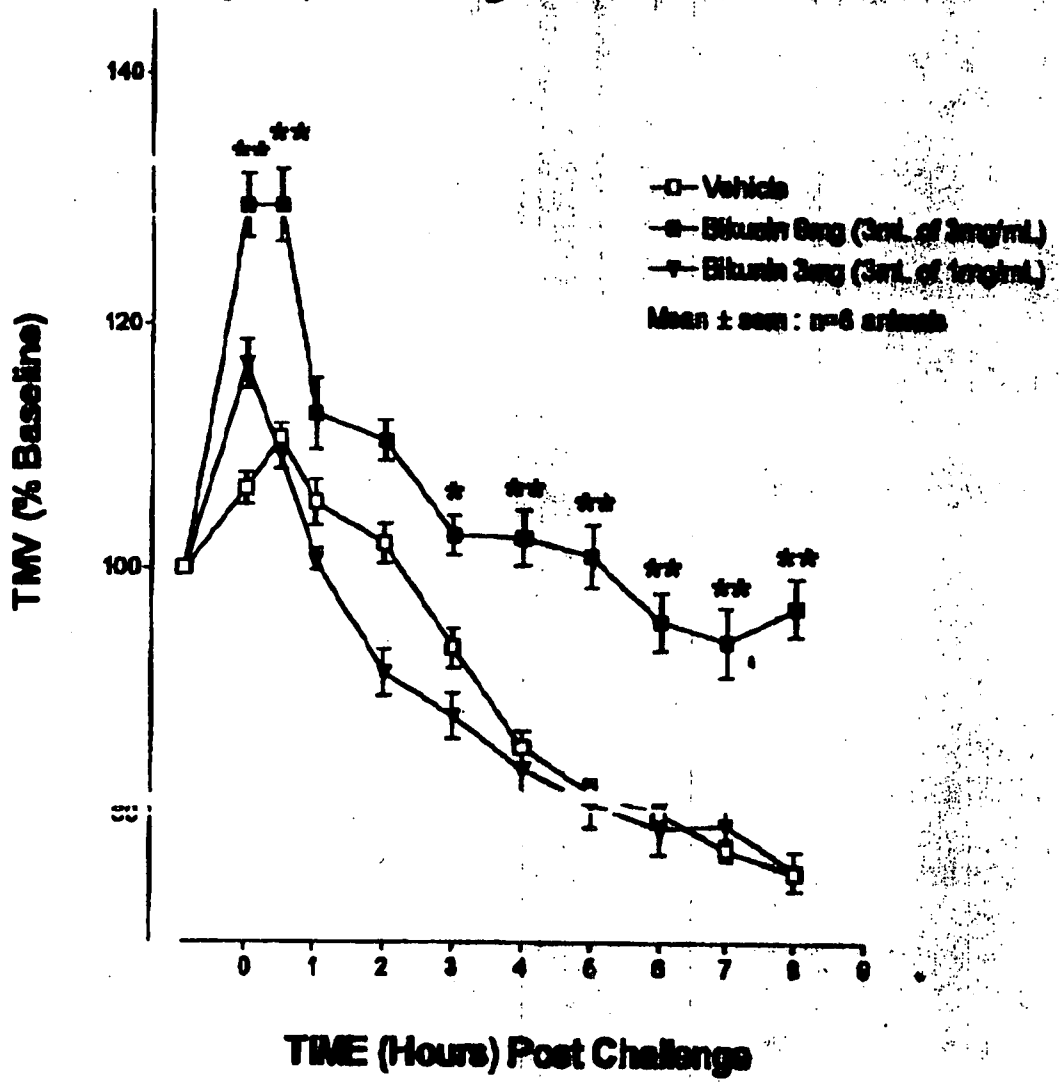


Figure 23 : The effect of a 30 minute pre-treatment of Bikunin (50 and 10 ug/mL) on the short circuit current (Δ Isc) response to amiloride (30uM) in cultured guinea-pig tracheal epithelial cells

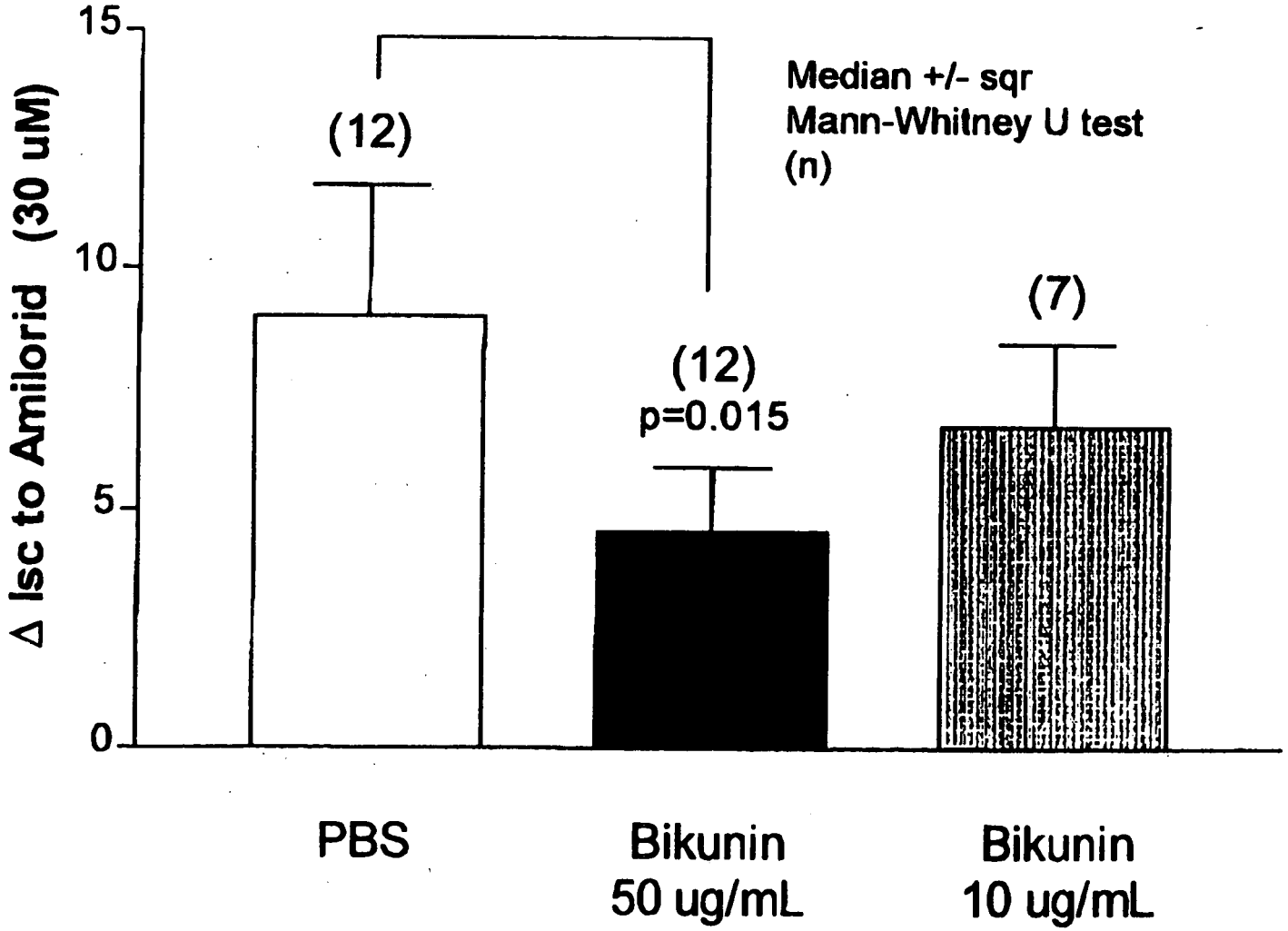


Figure 4f : The effect of a 90 minute pre-treatment of Bikunin (100 and 50 ug/mL) on the short circuit current (Δ Isc) response to amiloride (10 uM) in cultured Ovine tracheal epithelial cells

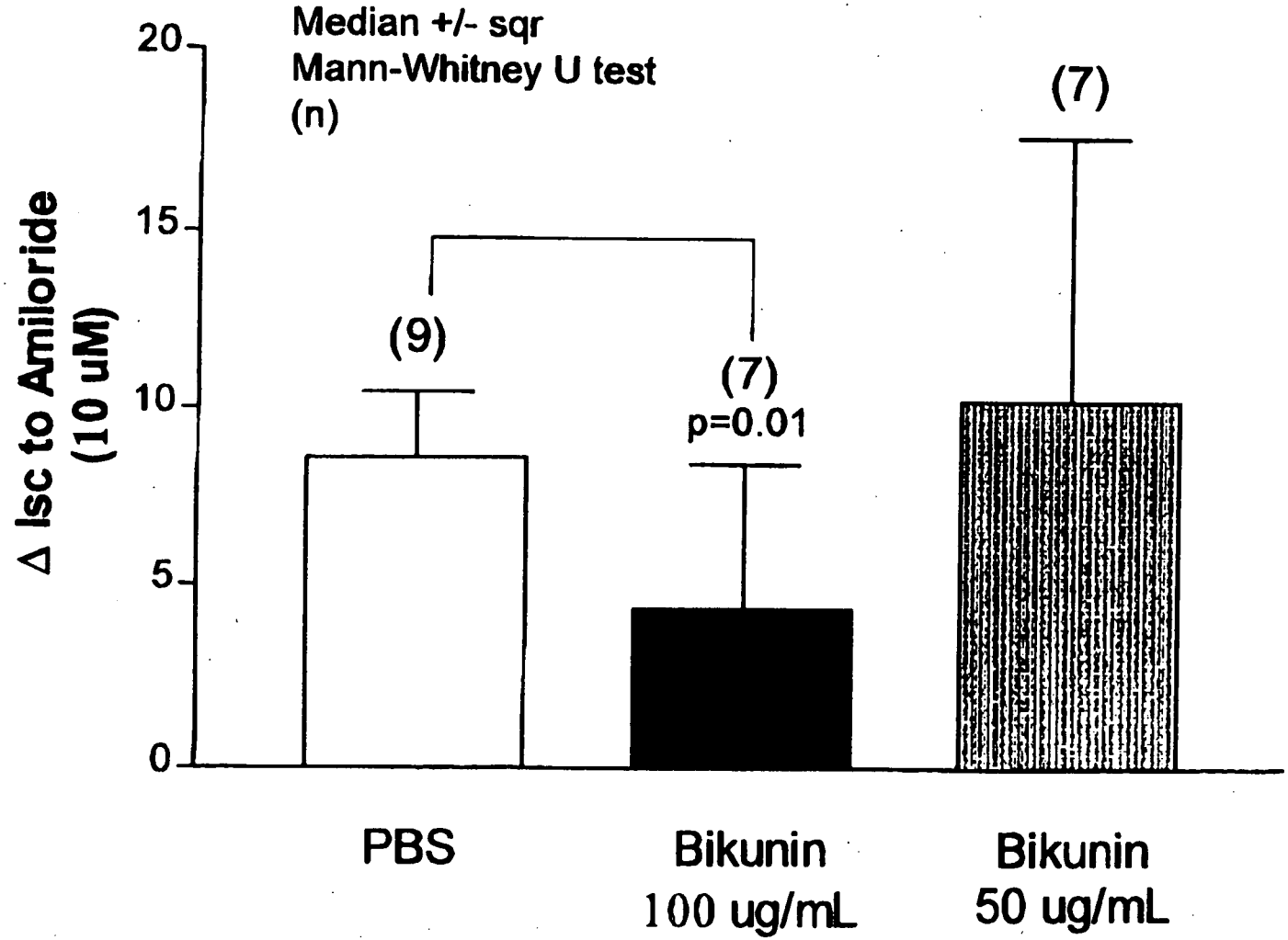


Figure 25(a): The Effect of LPS (0.03 mg/mL x 10 min) on neutrophil numbers in bronchoalveolar lavage fluid (BALF) of the guinea-pig 24 hours post challenge

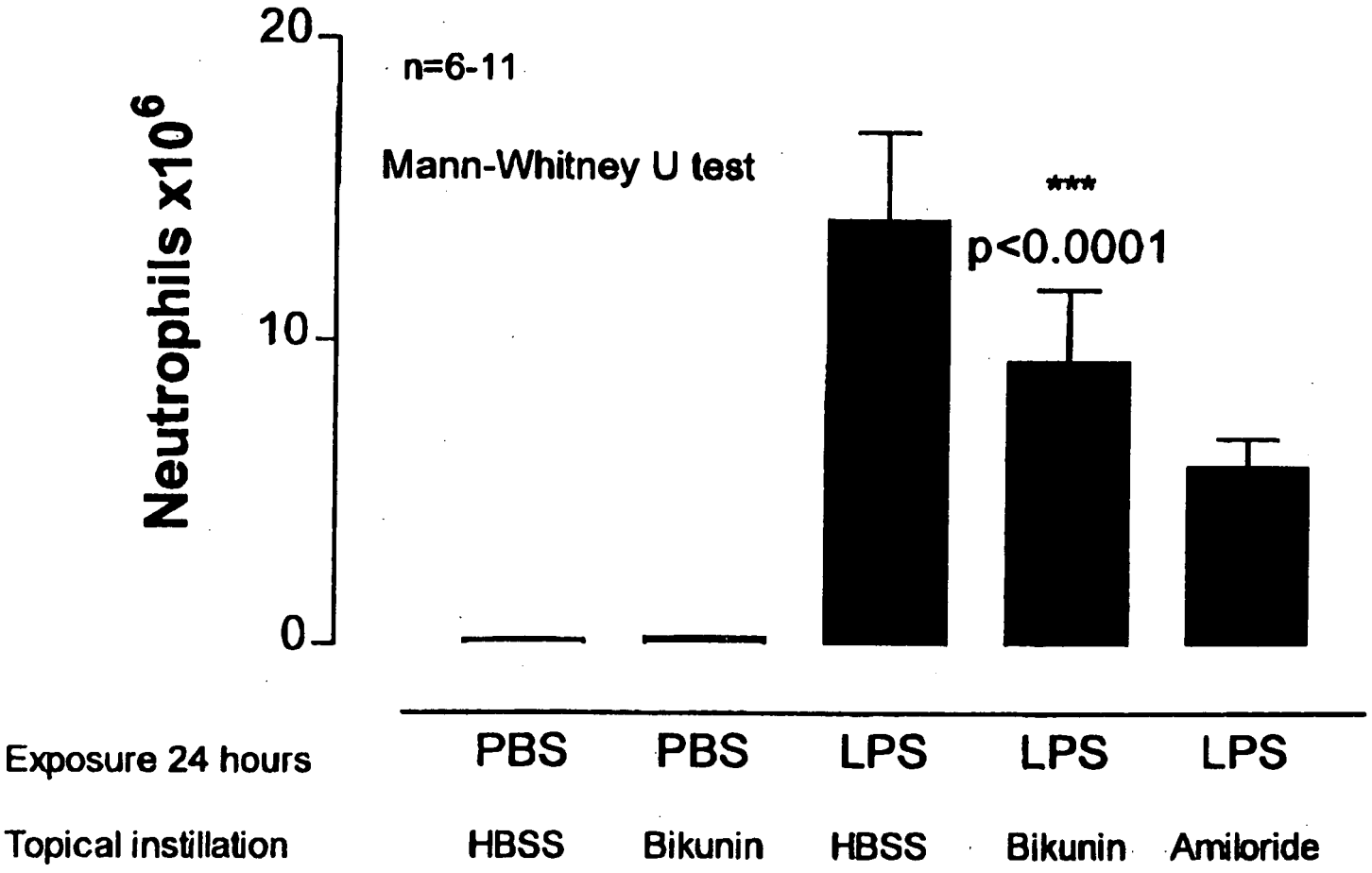


Figure 25(b) : The Effect of Bikunin (50 ug/mL) on Tracheal Potential Difference (TPD) in Guinea-Pigs pre-exposed to LPS (0.03 mg/mL x 10 min)

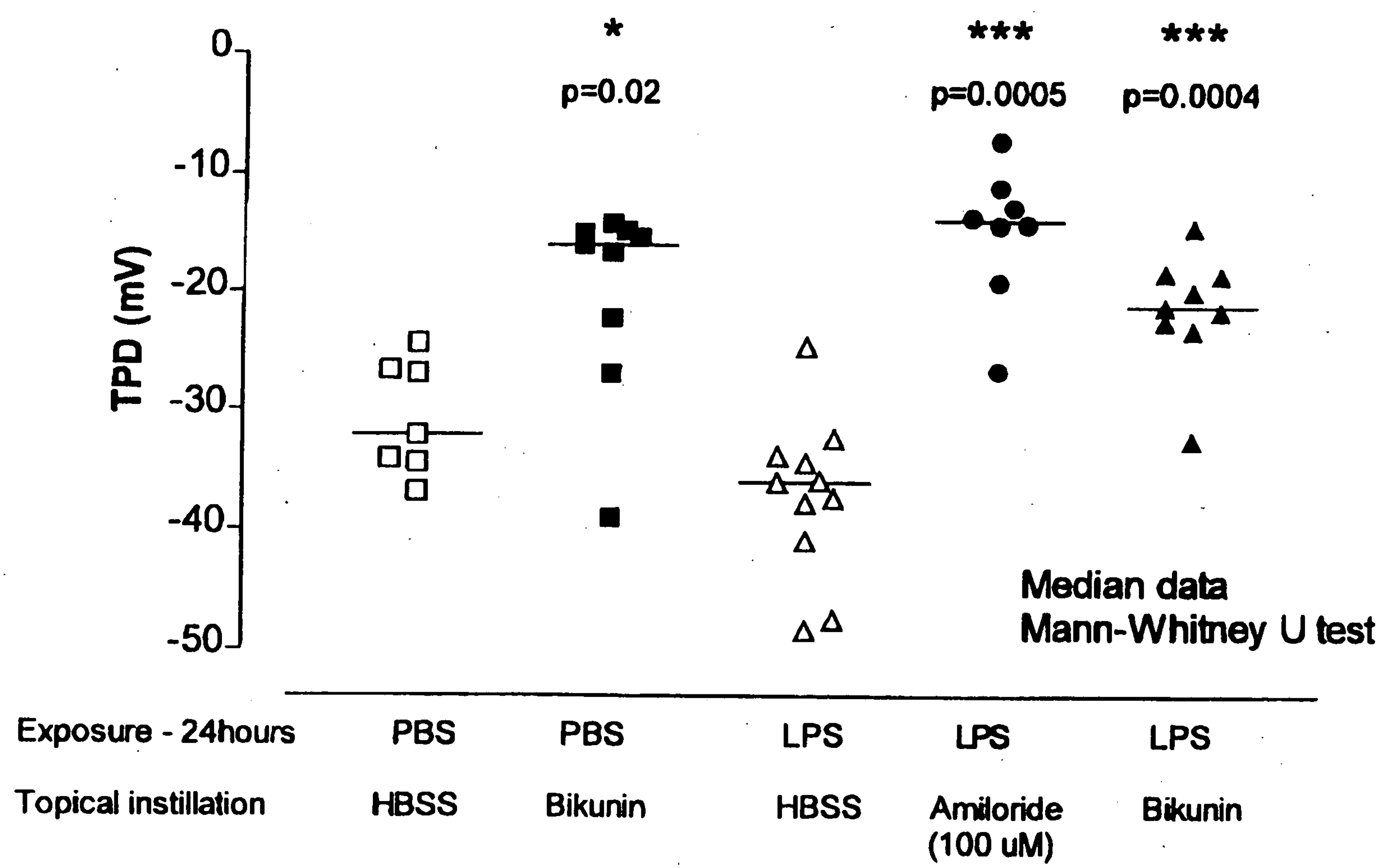
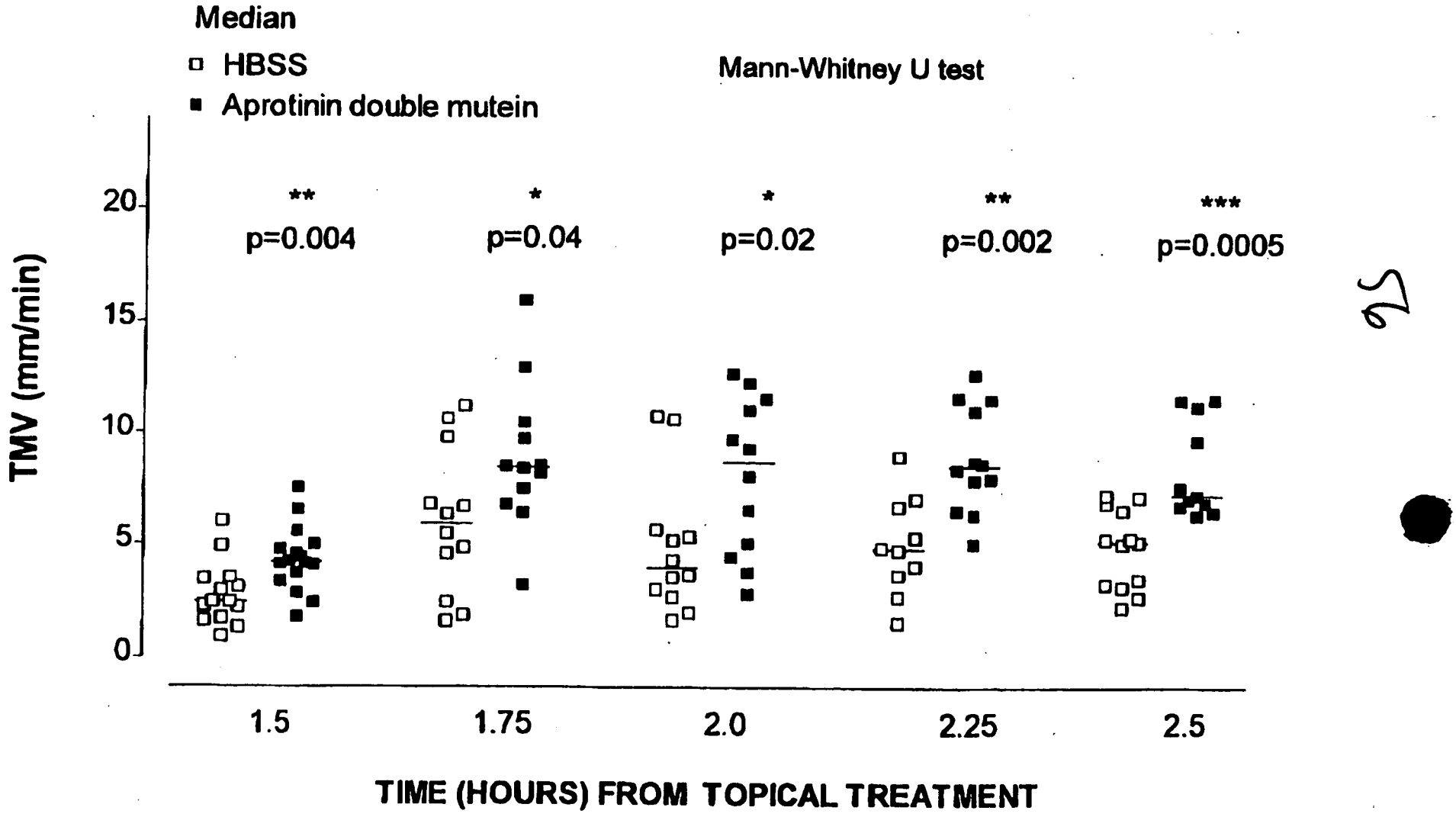


Figure 26: The effect of Aprotinin double mutein (10 ug) on tracheal mucus velocity (TMV) in the anaesthetised spontaneously breathing guinea-pig



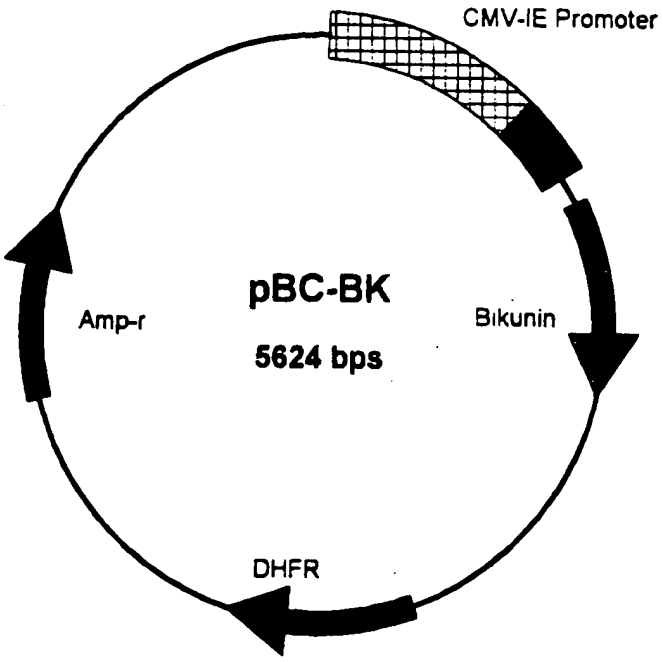


Figure 27

Figure 28(a) : Short circuit current (Isc) trace to show the action of CHO rhBikunin (1-170) (10 ug/mL) on sodium dependent current in cultured cystic fibrosis human bronchial epithelial cells in vitro.

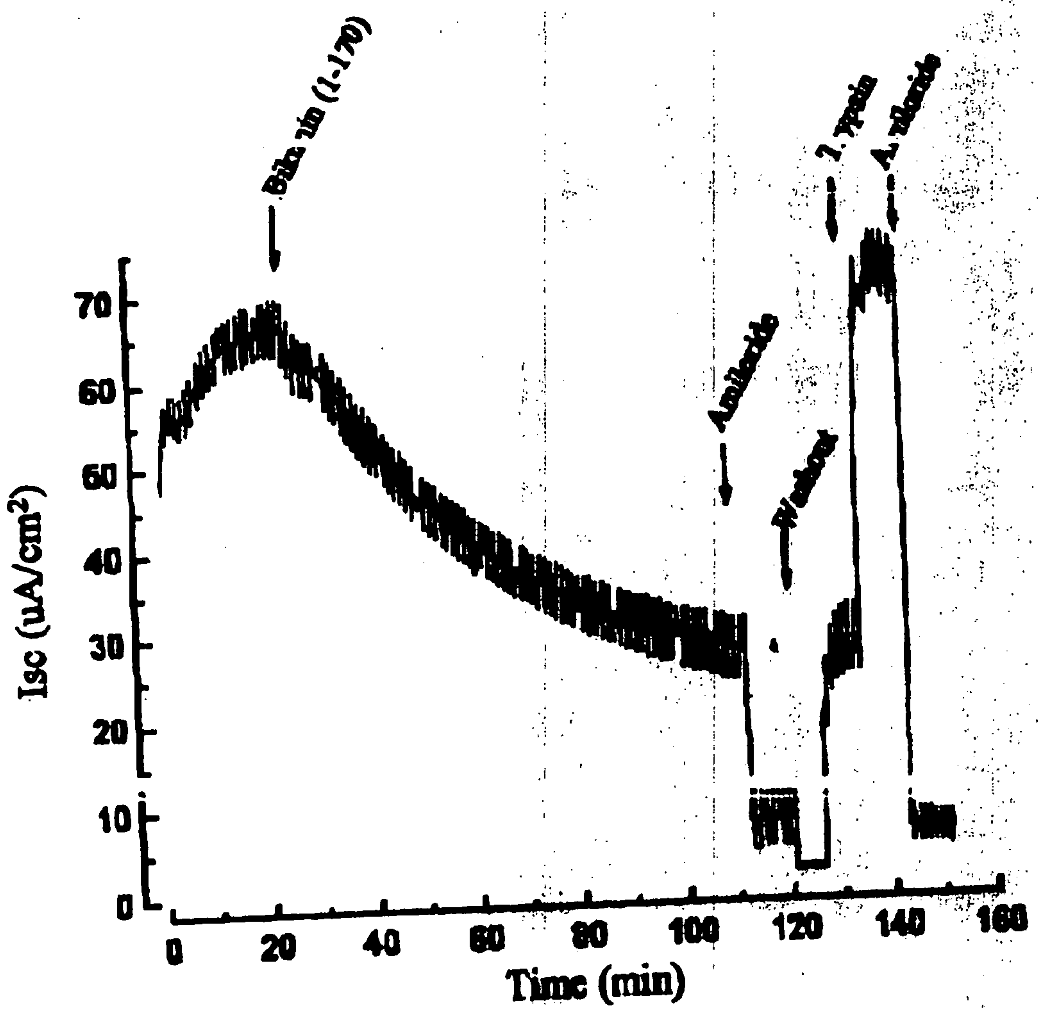
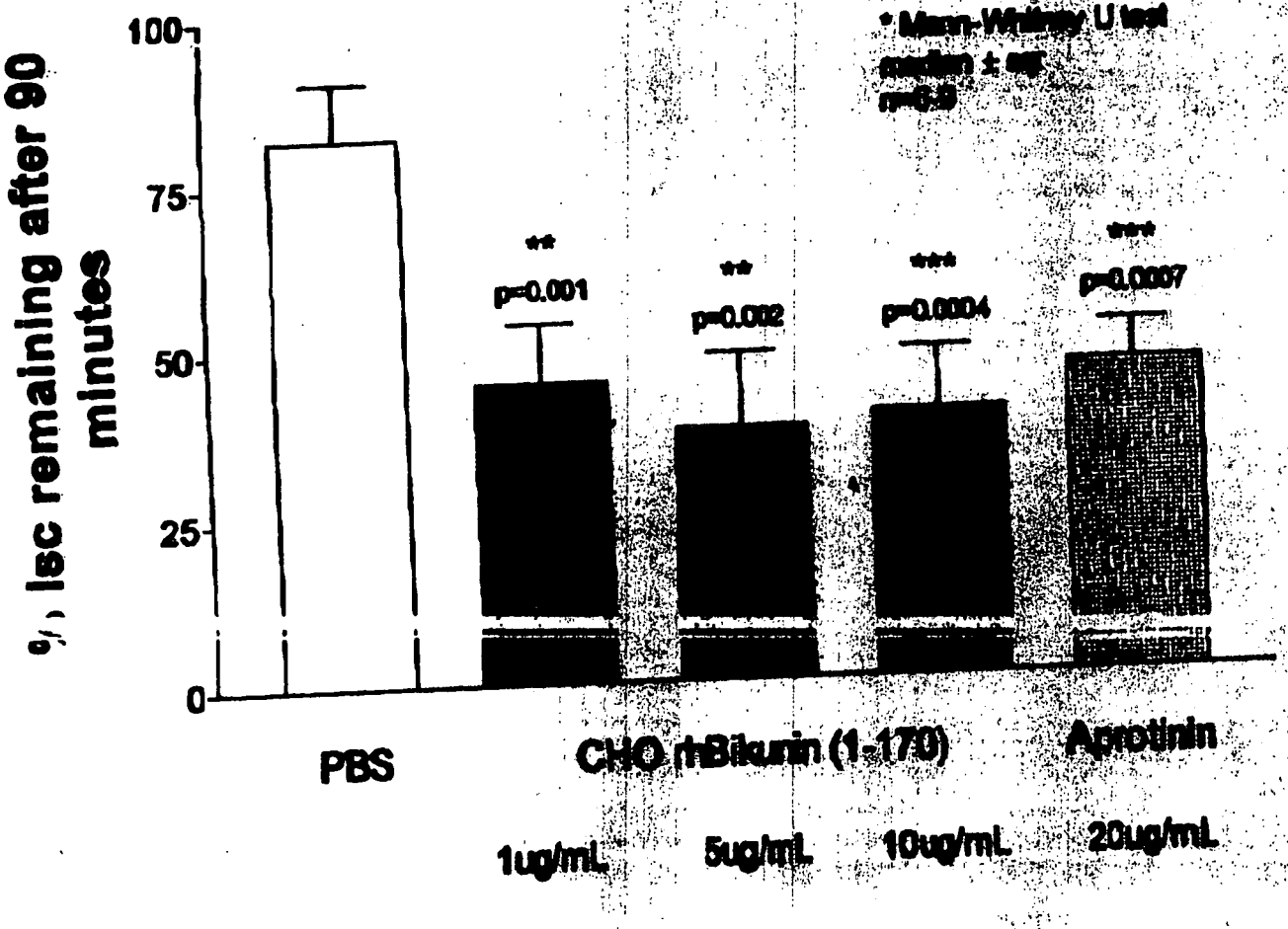


Figure 28(b) : Percentage baseline short circuit current (Isc) remaining at 90 minutes after pretreatment with PBS, CHO rhBikunin (1-170) (1.0 ug/mL - 10 ug/mL) or Aprotinin (20 ug/mL) in cystic fibrosis bronchial epithelial cells in vitro.



Flow Chart of CHO rhBikunin Purification Process Train

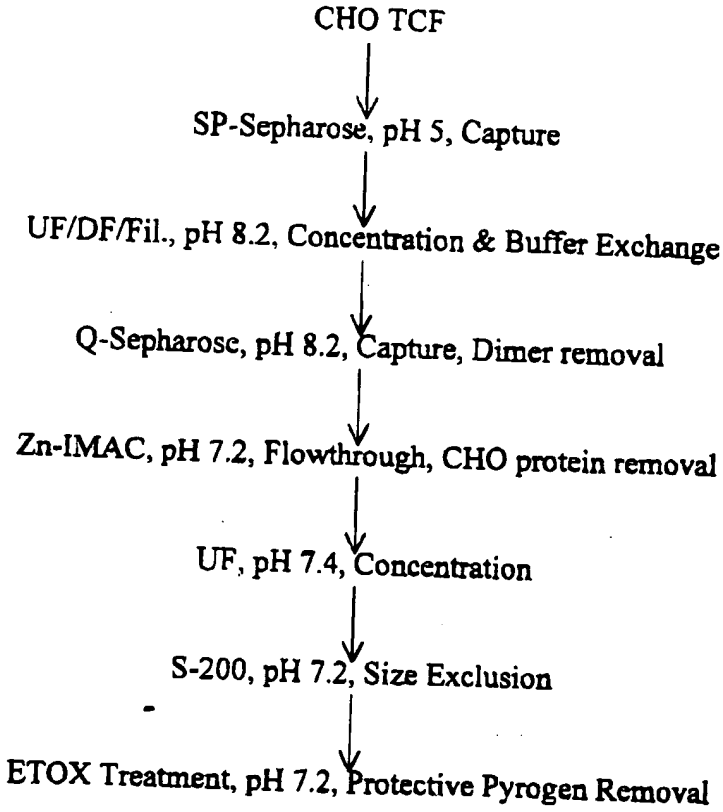


Figure 29

Figure 30(a)

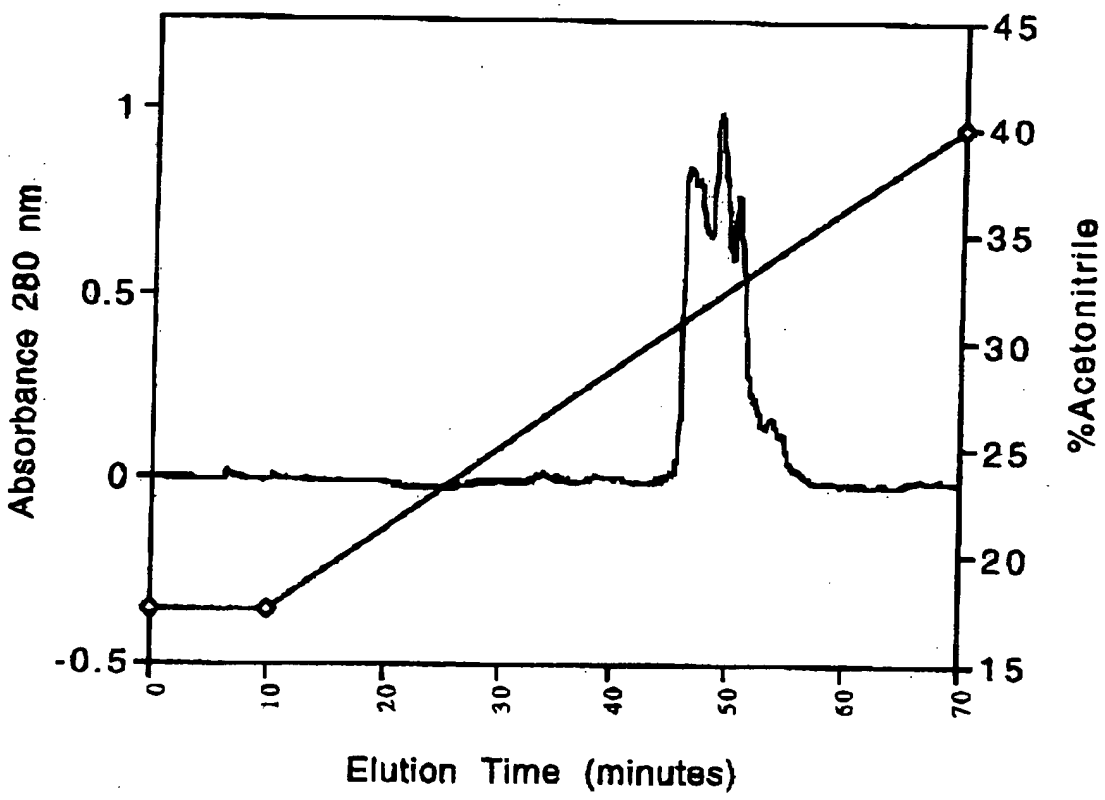

Absorbance 280 nm
1
0.5
0
-0.5
0
10
20
30
40
50
60
70
Elution Time (minutes)
45
40
35
30
25
20
15
%Acetonitrile

Figure 30(b)

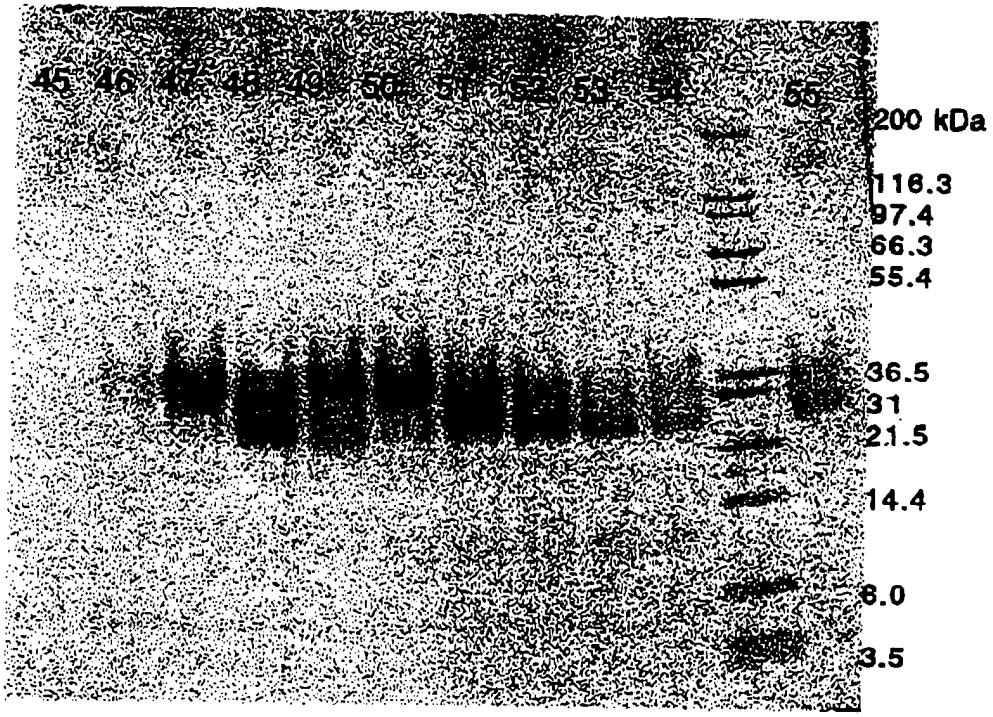
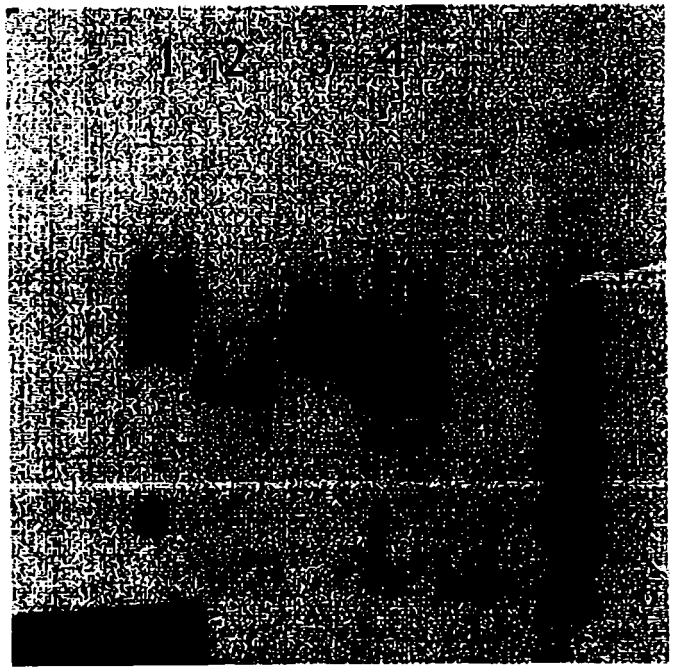

45
46
47
48
49
50
51
52
53
54
55
200 kDa
116.3
97.4
66.3
55.4
36.5
31
21.5
14.4
8.0
3.5

Figure 31

Deglycosylation of CHO-derived Bikunin



Lane 1: "High" MW bikunin prior to treatment
2: "High" MW bikunin post N-Glycosidase F
3: "Low" MW bikunin prior to treatment
4: "Low" MW bikunin post N-Glycosidase F